



DAYLIGHT SAVING TIME

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Standard Time becomes Daylight Saving Time (DST) at 2:00 a.m. local time, Sunday, March 13, 2011 when clocks are officially advanced by one hour (although most people will reset their timepieces before going to bed or wait until the next morning). The second Sunday of March also marks the fifth year of extended DST – a provision of the U.S. *Energy Policy Act* of 2005 that changed the start and end dates of DST. Ontario adopted a similar provision in January 2007.

This backgrounder examines basic questions, history, and interesting facts related to both Standard Time and Daylight Saving Time.

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INTRODUCTION

Standard Time becomes Daylight Saving Time (DST) at 2:00 a.m. local time, Sunday, March 13, 2011 when clocks are officially advanced by one hour (although most people will reset their timepieces before going to bed or wait until the next morning). The second Sunday of March also marks the fifth year of extended DST – a provision of the U.S. *Energy Policy Act* of 2005 that changed the start and end dates of DST. (Ontario, along with most other provinces and territories, adopted a similar provision in January 2007).

In 2011, DST watchers will learn whether the Government of Saskatchewan will honour a commitment to hold a provincial referendum on DST in conjunction with the general election scheduled for November 7. In the United Kingdom, House of Commons backbencher Rebecca Harris is hoping to see her Daylight Saving Bill adopted. If passed, it would advance the clocks by one full hour year round. British Summer Time (GMT+1) would operate in the winter months and British Summer Time (GMT+2) in the summer months. Supporters say this proposal, known as “Single/Double Summer Time (SDST), will reduce road casualties, cut carbon emissions, and stimulate the economy.

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

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 March 7, 2011.

states to consider year-round DST or even Double Daylight Saving Time as a means of reducing power consumption.³ As an energy conservation measure, the U.S. *Energy Policy Act* declared that commencing in 2007, DST would 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 Extended DST (EDST) 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. 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. 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 is widely credited with inventing the worldwide system of standard time zones.

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 Saving Time (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* (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 March 7, 2011).

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

Prior to the establishment of standard time, there was local time (also known as solar time), determined by the position of the sun at midday, and varying from one community to another. Prior to 1883, there were 100 or more local time zones in the United States based on solar time.⁷ Before the adoption of standard time, 12 noon in Kingston was twelve minutes later than 12 noon in Montreal and thirteen minutes before 12 noon 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. Railways began using Greenwich Mean Time (GMT) as the Standard Time for England, Scotland and Wales in the 1840s, although it would not become the legal standard until 1880. According to the Dictionary of Canadian Biography (DCB),

in 1879 two reports, each prepared independently of the other, took a global approach to the problem [of standard time zones] and each received wide circulation. One author was Fleming; the other was Cleveland Abbe, chief of the United States Weather Service. . . . The two schemes were so similar that the authors joined to form a powerful lobby with . . . strong ties to Washington and international scientific leaders. Together they took every opportunity to promote the case for time standards.⁹

On November 18, 1883, North American railways adopted a system of one-hour time zones proposed by William F. Allen, secretary of the General Time Convention. The DCB describes the rest of the story, including Fleming's role in the 1884 International Prime Meridian Conference¹⁰ as follows:

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

⁸ The CRB Foundation Heritage Project, "Sandford 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).

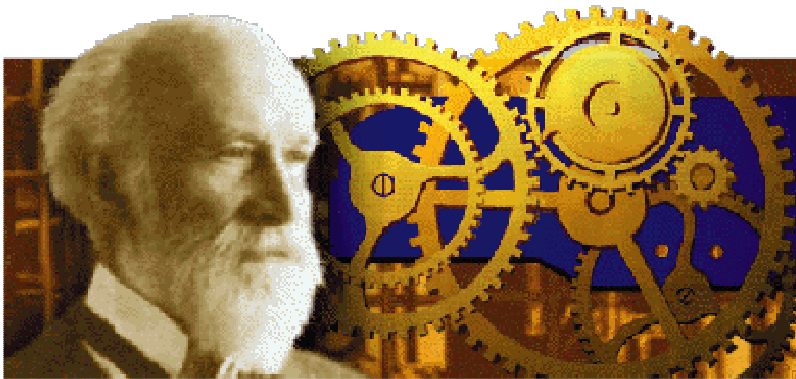
⁹ *Dictionary of Canadian Biography Online*, "Fleming, Sir Sandford" accessed at http://www.biographi.ca/009004-119.01-e.php?&id_nbr=7370 on March 8, 2011.

¹⁰ See <http://wwp.greenwich2000.com/millennium/info/conference-finalact.htm>, accessed March 7, 2011.

Because of its simplicity, railway time soon became the standard for the continent. But the need remained for global uniformity. The key players of the metrological society and the ASCE [American Society of Civil Engineers – Fleming chaired its standing committee on time] were successful in getting Congress to call an international gathering in 1884 to decide on the core question: where the prime meridian would be. Grudgingly included in the British delegation, Fleming was the only delegate to distribute a position paper. The conference eventually endorsed his main points, but each country was to make its own decision on adoption. A mean time based on an existing prime meridian through Greenwich (London), England, with hourly variations according to established time zones, became standard before the end of the century in most major countries.¹¹

The railway time zones were not recognized in U.S. law until March 19, 1918, when the *Standard Time Act* came into force.¹²

Sir Sandford Fleming (1827 – 1915)



Graphic reproduced by kind permission of National Research Council of Canada and the Canadian Science and Engineering Hall of Fame.

Resources on Sir Sandford Fleming

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

Fleming, Sir Sandford (http://www.biographi.ca/009004-119.01-e.php?&id_nbr=7370)
Dictionary of Canadian Biography Online

Sir Sandford Fleming
(<http://www.thecanadianencyclopedia.com/index.cfm?PgNm=TCE&Params=A1ARTA0002857>)
The Canadian Encyclopedia

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

¹¹ *Dictionary of Canadian Biography Online*, “Fleming, Sir Sandford”, see note 9.

¹² 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 March 7, 2011.

Lawrence J. Burpee, *Sir Sandford Fleming Empire Builder*.
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Hugh Maclean, *Man of Steel The Story of Sir Sandford Fleming*,
Toronto: the Ryerson Press, 1969
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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

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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.britannica.com/EBchecked/topic/563012/standard-time>)

Encyclopedia Britannica, Online Academic Edition, accessed March 7, 2011

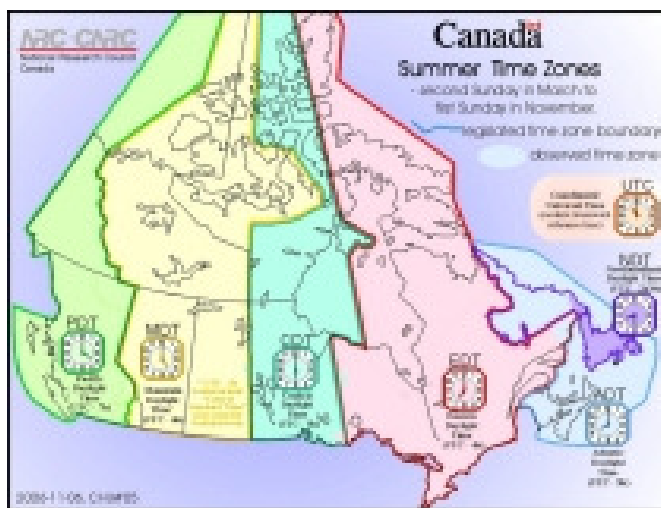
Standard Time Zones

(<http://atlas.nrcan.gc.ca/site/english/maps/reference/national/timezones/>)

The Atlas of Canada, accessed online March 7, 2011

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.

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.¹³

BRIEF HISTORY OF DAYLIGHT SAVING TIME

1784 - 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 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.¹⁴

1907 - Next, William Willett, 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

¹³ “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.

¹⁴ Prerau, *Seize the Daylight*, p. xii-xiv.

utterance to regret that the clear, bright light of an early morning during Spring and Summer months is so seldom seen or used.¹⁵

1908 - In 1908, an MP of the British Parliament (Robert Pearce) became intrigued with the ideas of William Willet. 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.¹⁶

1916 - 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 Germany soon followed that country's lead (e.g., Austria-Hungary, Holland, Denmark and Sweden).¹⁷

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.¹⁸

Wartime - Clocks in the United Kingdom 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.

¹⁵ Institute for Dynamic Educational Advancement, "Daylight Saving Time – Rationale and Original Idea." see note 12.

¹⁶ Prerau, *Seize the Daylight*, pp. 52-53.

¹⁷ Ibid., p. 53.

¹⁸ Ibid., p. 57.

1950s and 1960s - 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.¹⁹ 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).²⁰ 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.²¹

1974-6 - 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.²² 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.

1986 - 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 was estimated that extending DST from the last Sunday of April to the first Sunday yielded savings of 300,000 barrels of oil nationwide.²³

2005 - As noted earlier, in 2005 the United States Congress 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 –

¹⁹ Institute for Dynamic Educational Advancement, "Daylight Saving Time – Rationale and Original Idea." see note 12.

²⁰ See http://www.law.cornell.edu/uscode/html/uscode15/usc_sup_01_15_10_6_20_IX.html, accessed March 7, 2011.

²¹ Aldrich, "Saving Time, Saving Energy: Daylight Saving Time, Its History and Why We Use It," n. p.

²² Ian R. Barkky and Elizabeth Harrison, "Standard and Daylight-saving Time," *Scientific American* (May 1979), p. 50.

²³ Institute for Dynamic Educational Advancement, "Daylight Saving Time – Rationale and Original Idea." see note 12.

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.

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.

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 1908.²⁴ Some permitted DST through by-law while others did so by consensus.²⁵

Between 1984 and 1986, New Democratic MPPs, Michael Cassidy (Ottawa Centre) and Ross McClellan (Bellwoods) introduced Private Members' Bills 47,

²⁴ Prerau, *Seize the Daylight*, n. p.

²⁵ Correspondence with officials from the Ministry of the Attorney General, (February 27, 2007). The Ministry of the Attorney General administers the *Time Act*.

40 and 58 endorsing the extension of DST in an effort to maximize sunshine during leisure hours.²⁶

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 extend the use of daylight hours. 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.

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.²⁷

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

²⁶ 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. McClellan'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).

²⁷ Ontario, Legislative Assembly, *Official Report of Debates (Hansard)*, Fourth Session, 32nd Parliament (26 April 1984), pp. 960-1.

authorized by provincial or federal legislation but by municipal ordinance.²⁸ 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 Grandmaitre directed their attention to the 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.²⁹ 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 2005 Response

The Ministry of the Attorney General (AG) administers Ontario's *Time Act*.³⁰ In 2005, Attorney General Michael Bryant asked his Parliamentary Assistant (PA), David Zimmer to investigate the impact that the extension of DST could have on the different sectors in Ontario. 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:

²⁸ 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).

²⁹ Ontario, Ministry of Municipal Affairs, *News Release* (March 10, 1987).

³⁰ See http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90t09_e.htm, accessed March 8, 2011.

trade disruption as well as cost coordination, delivery system supply chain and border pressures.³¹

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.”³²

In April 2006 the Ontario government enacted Ontario Regulation 111/06 under the *Time Act*.³³ The regulation, which came into force on January 1, 2007, contained provisions to change Ontario’s DST schedule which have now been incorporated in the Act itself:

Daylight saving time

2. (3) Daylight saving time shall be reckoned as one hour ahead of standard time.

Time in effect

(4) The time in effect shall be,

(a) daylight saving time 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 during the rest of the year.

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.

³¹ 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 8, 2011.

³² Lee Greenberg, “Ontario to extend daylight savings,” *National Post*, (October 21, 2005), p. A4.

³³ See http://www.e-laws.gov.on.ca/html/revokedregs/english/elaws_rev_regs_060111_e.htm, accessed March 8, 2011.

Daylight Saving Time Resources

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Daylight Saving Time
The Columbia Encyclopedia, Sixth Edition. 2001
(<http://www.bartleby.com/65/da/daylight.html>)

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.³⁴

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.³⁵

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.³⁶

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.³⁷

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 and the necessity for airlines, buses and trains to change their arrival/departure schedules twice a year.³⁸ The Saskatchewan Chamber of

³⁴ 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), updated as *Saskatchewan Time System*, Internet site at <http://www.municipal.gov.sk.ca/publications/sasktime> accessed on September 11, 2003.

³⁵ Ibid. p. 2.

³⁶ Ibid.

³⁷ 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.

³⁸ Bruce Penton, "Why won't Saskatchewan spring forward?" *Globe and Mail*, 25 April 1995.

Commerce (SCC) passed a resolution during the 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.”³⁹ 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.⁴⁰ 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.”⁴¹ 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.⁴² 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 showed a majority of Saskatchewan residents opposed to

³⁹ “Chamber backs DST,” *The Leader Post* (Regina), 19 September 2001, p. A1.

⁴⁰ 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.

⁴¹ 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.

⁴² “Brad Wall promises a referendum or plebiscite on daylight saving time issue,” *Leader-Post*, November 2, 2007.

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.⁴³ 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.⁴⁴

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 might wish 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.⁴⁵ Daylight Saving Time watchers will undoubtedly hear much more on the Saskatchewan DST debate as the November 7, 2011 General Election draws closer.⁴⁶ Two recent Election Saskatchewan reports referenced the possible 2011 referendum on DST. The Office of the Chief Electoral Officer of Saskatchewan periodically administers and oversees referenda and plebiscites under the *Referendum and Plebiscite Act* and time votes under *The Time Act*.⁴⁷

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/sasktime>) 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

⁴³ "Daylight savings issue best settled via referendum," *Star-Phoenix*, 21 January 2010, p. A.10.

⁴⁴ James Wood, "Vote on time issue not a sure thing," *Leader Post*, 14 January 2010, p. A.8.

⁴⁵ "Daylight savings issue best settled via referendum," *Ibid.*

⁴⁶ In one of his first actions as premier, Brad Wall, Leader of the Saskatchewan Party passed legislation setting a fixed provincial election date to fall on the first Monday in November every four years. Saskatchewan is among four other Canadian jurisdictions that have fixed date elections. The others are British Columbia, Ontario, Newfoundland and Labrador, and the Northwest Territories.

⁴⁷ See Elections Saskatchewan, *Annual Report of the Chief Electoral Officer of Saskatchewan 2009-2010*, Internet site at <http://www.elections.sk.ca/pdfs/AnnualReport2009-2010-final.pdf> accessed on 28 February 2011; and Elections Saskatchewan, *The Recount: Report of the Review of the Operational Environment and Accountabilities of the officer of the Chief Electoral Officer for Saskatchewan*, (March 2009) Internet site at <http://www.legassembly.sk.ca/legassembly/The%20Recount%20Sask.pdf> accessed on 28 February 2011.

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. On October 31, 1999, the new territory changed 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.⁴⁸

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, seeking a compromise. In October 2000, the press reported the government's solution: 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. In addition, when the first Sunday of April 2001 arrived and most Canadians were advancing their clocks to Daylight Saving Time, Nunavut clocks would remain unchanged, moving the territory's time into conformity with the Central Standard Time zone for the next six months.⁴⁹

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.⁵⁰

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:

⁴⁸ 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.

⁴⁹ Ibid.

⁵⁰ Nunavut, Ministry of Justice, "Time Zone", Ministerial Statements, 1 March 2001.

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]	Local Government
Ontario	<i>Time Act</i> [http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90t09_e.htm]	Attorney General
Québec	<i>Legal Time Act</i> [http://www.ijican.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]	Justice and Public Safety
Newfoundland and Labrador	<i>Standard Time Act</i> [http://assembly.nl.ca/Legislation/sr/statutes/s23.htm]	Municipal Affairs
Yukon	<i>Interpretation Act</i> See O.I.C. 2006-07 <i>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.⁵¹ China, which enacted a single time zone in 1980, observed DST between 1986 and 1991, but no longer does so.⁵²

The dates that 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 to commence 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.⁵³ In 2011, British Summer Time (GMT+1) will commence at 1:00 a.m. Sunday March 27 and end at 1:00 a.m. Sunday October 30.

The UK’s “10:10 Lighter Later” Campaign

The Lighter Later campaign in the UK is comprised of groups that favour more daylight in the evening than in the morning for reasons linked to the environment, road safety, the environment, commerce, and leisure.⁵⁴ The most recent development is the Private Member’s bill on Daylight Saving introduced by Conservative “rookie” backbencher, Rebecca Harris (Essex Castle Point). Debated at Second Reading on December 3, 2010, it has been referred to a

⁵¹ 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.

⁵² See table at <http://webexhibits.org/daylightsaving/g.html>, accessed March 8, 2011.

⁵³ 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.

⁵⁴ According to the group’s website, 10:10 is “an ambitious project to unite every sector of British society behind one simple idea: that by working together we can achieve a 10% cut in the UK’s carbon emissions in 2010.” See 10:10 Lighter Later *Who we are*, Internet site <http://www.lighterlater.org>, accessed on February 24, 2011.

Committee for further scrutiny. If passed, the Bill would require the Secretary of State to conduct a cross-departmental analysis of the potential costs and benefits of advancing time by one hour for all or part of the year. The Act would apply to England, Wales, Scotland and Northern Ireland. If analysis were to find that a clock change would benefit the UK, the Bill would require the Government to initiate a three-year trial to determine the full implications of the change.⁵⁵ The proposal has been very popular among transportation safety groups such as Brake. Other groups representing environmental issues, tourism, leisure, and sports industries believe that lighter evenings would bring an extra £3bn into the economy and create an additional 80,000 new jobs.⁵⁶ In 2010 Brake awarded Rebecca Harris “Parliamentarian of the Month” award for her efforts in advancing the Lighter Later arguments and for supporting a clock change pilot project.⁵⁷

Not everyone in the UK is supportive. Peter Hitchens writing in the *Daily Mail* cautioned readers that if the well-supported Harris bill is passed, UK residents will be experiencing late sunrises in the north of England and Scotland in the winter months. Hitchens does not accept the claims that lighter later afternoons in winter or summer “will make the roads safer, make old people less lonely, reduce crime, save energy, and boost business.” Arguing that light and dark make little difference to road safety in the evenings, he points out that evenings are more dangerous than mornings on the roads because drivers have had more time to consume alcohol. Hitchens also dislikes the proposal because the UK would no longer be aligned with Greenwich Mean Time but with Central European Time. “When our clocks say it is noon, or midnight, they will always be lying. For the summer months, they will be lying twice as hard.”⁵⁸

The transition to the new regime could be done simply, according to advocates. For example, in the autumn of 2011 clocks would *not* be set back by an hour. In the spring of 2012 the clocks would be advanced by one hour. Thereafter, the current arrangement of setting the clocks back an hour in the fall and one hour forward in the spring would continue.⁵⁹

⁵⁵ United Kingdom, Parliament, Bills before Parliament, House of Commons, *Daylight Saving Bill*, <http://www.publications.parliament.uk/pa/cm201011/cmbills/007/11007.i-1.html> accessed on January 24, 2011.

⁵⁶ Lighter Later: Can David Cameron end this daylight robbery? (2010), Internet site at <http://www.lighterlater.org> accessed on February 24, 2011.

⁵⁷ Brake, the road safety charity, “Rebecca Harris, MP for Exxex Castle Point, June/July 2010, Internet site at <http://www.brake.org.uk/rebecca-harris> accessed on February 24, 2011.

⁵⁸ “Don’t let them force you to live your life on Berlin time: Join the Mail on Sunday’s British Time Campaign,” Daily Mail Online, Internet site at <http://www.dailymail.co.uk/news/article-1329444/Join-campaign-Greenwich-Mean-Time..> (accessed on January 24, 2011).

⁵⁹ Policy Studies Institute, University of Westminster, Dr. Mayer Hillman, *Making the Most of Daylight Hours: The implications for Scotland* (October 2010), p. 37, pdf document at

The prospect of the Lighter Later reforms has caused some tempers to flare among residents in the North of Scotland who fear pitch black mornings, late sunrises, and being told what to do by parliamentarians from London.

The problem is that while a clock change might bring afternoon joy to London, it would condemn Inverness in the far reaches of Scotland—in relative terms, about 700 miles north of Montreal—to long, dark winter mornings with sunrises as late as 10 a.m.

Even worse, many Scots feel it would mean giving in to English politicians. Though the devolution of British politics has given Scotland its own legislature and responsibility for many of its own affairs, the clock is still controlled by Parliament in London.⁶⁰

The Lighter Later proposals have focused particular attention on Scotland and its concerns. In response, the UK's Policy Studies Institute (PSI) published a report entitled *Making the most of daylight hours: the implications for Scotland*. Author Dr. Mayer Hillman concluded

that advancing the clocks would bring the Scottish people at least as great benefits as those predicted for the rest of the UK. Public opinion polls reveal strong public support for the change in England and Wales and fairly evenly-divided support in recent polls in Scotland in spite of an incorrect or exaggerated perception of the consequences. The evidence in this report adds up to a strong case for reform.⁶¹

The Policy Studies Institute noted that the report is the first to examine the impacts of the clock change with a specific focus on Scotland. It concludes that shifting the clocks forward by one hour all year would be beneficial for Scotland precisely because of the limited number of daylight hours it receives in the winter. Moreover, shifting clocks forward by one hour would

- save lives on the road;
- increase opportunities for outdoor leisure and social activities in the evenings;
- improve the health and quality of life of the great majority of the population;

http://www.psi.org.uk/pdf/2010/SCOTLAND_DAYLIGHT_FINAL_v4.pdf, accessed March 7, 2011.

⁶⁰ Sarah Lyall, "Scots Tell London, Hands Off Our Clocks," *New York Times*, January 21, 2011.

⁶¹ Mayer Hillman, Daylight Saving, (2008 – 2011) Internet site at <http://www.mayerhillman.com/Daylight-saving.aspx> accessed on March 6, 2011.

- widen opportunities for people fearful of being out after dark, especially the elderly, to go out in the evenings;
- enable parents to extend the hours they allow their children to be out of doors; and
- boost the leisure and tourism industries through increased revenue and job generation.⁶²

The Lighter Later advocates understand that this debate is a passionate one. In their view the PSI research will not be the last word on the subject. However, they also believe that the Scotland-specific research will help move the debate forward.⁶³

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.⁶⁴

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 Northern Mariana Islands, and Arizona. However, the Navajo Nation (located within Arizona and other states) does observe DST. 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.⁶⁵ The reason Arizona does not observe DST is partially based upon energy

⁶² Dr. Mayer Hillman, "Daylight saving report on clock change concludes that Scotland would benefit," blogs, articles, Daylight Saving, Internet site at <http://www.mayerhillman.com/Articles/EntryId/60/Daylight-saving-report-on-clock-change-concludes-that-Scotland-would-benefit.aspx>, accessed on March 6, 2011.

⁶³ Lighter Later, "New research: clock change good for Scotland," Internet site at <http://www.lighterlater.org> accessed on January 24, 2011.

⁶⁴ Aldrich, "Saving Time" n. p.

⁶⁵ 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 –

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.⁶⁶ In the southern hemisphere, Queensland, the Northern Territory and Western Australia do not observe DST.

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.⁶⁷ 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 have to travel down long laneways to catch the school bus.⁶⁸ Daylight Saving Time is most acceptable to the public when sunrises are not too late and sunsets are not too early.⁶⁹ 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.⁷⁰

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

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.

⁶⁶ 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.

⁶⁷ Ian R. Barkky and Elizabeth Harrison, “Standard and Daylight-saving Time,” *Scientific American* (May 1979), p. 50.

⁶⁸ Ontario, Legislative Assembly of Ontario, *Hansard: Official Report of Debates*, 33rd Parliament, 1st Session (12 December 1985): 2368.

⁶⁹ Barkky and Harrison, “Standard and Daylight-saving Time,” p. 50.

⁷⁰ *Ibid.*, p. 53.

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.⁷¹

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."⁷² 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."⁷³

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

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.⁷⁴

⁷¹ Aldrich, "Saving Time" n. p.

⁷² "California may take its time," *Tulsa World*, 29 May 2001.

⁷³ 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.

⁷⁴ 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.

Some people resent the twice a year inconvenience of adjusting their alarm clocks, and resetting the clocks on their various appliances.⁷⁵ 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."⁷⁶

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.⁷⁷ Other experts dispute these claims.⁷⁸ 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.⁷⁹ 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.⁸⁰

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."⁸¹ Several economists from British Columbia have suggested that

⁷⁵ Sheila Danzig, "End Daylight Saving time," 1997. Internet Site at <http://www.standardtime.com>, accessed on 13 May 2003.

⁷⁶ Wood, "Changing clocks a sore subject."

⁷⁷ 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.

⁷⁸ 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.

⁷⁹ 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.

⁸⁰ Charles Choi, "Spring Forward or Not? *Scientific American*, March 2009, p.18.

⁸¹ Ibid.

disrupted sleep routines lead to unusual declines on the stock market on the Monday following the start/end of DST.⁸²

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.⁸³

⁸² 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.

⁸³ Robertson Davies, *The Papers of Samuel Marchbanks* (New York: Viking Penguin, 1986), pp. 75-76.