



RESEARCH PAPER 07/09
22 JANUARY 2007

The *Energy Saving (Daylight) Bill*

Bill 18 of 2006-7

Tim Yeo drew second place in this session's Private Members Bill ballot. His *Energy Saving (Daylight) Bill* would advance time in England throughout the year by one extra hour for an experimental period of three years from October 2008 to October 2011. Winter would be one hour ahead of Greenwich Mean Time and summer two hours ahead. This would increase daylight by one hour in the evenings and decrease it by the same amount in the morning. It would also bring time in England in line with that of the Central European Time Zone. The Bill would provide the Scottish Parliament, the Welsh Assembly and the Northern Ireland Assembly (if not suspended), with powers similarly to change time.

Edward White

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Summary of main points

The clocks in the UK are all set to Greenwich Mean Time (GMT) in the winter and are moved on by one hour in the summer (GMT+1). Tim Yeo's Private Members Bill, the *Energy Saving (Daylight) Bill*, would advance the clocks in England by one hour for an experimental period of three years. It would also provide the Scottish Parliament, the Welsh Assembly and the Northern Ireland Assembly (if not suspended), with powers to opt-in to a similar change of time. If all were to opt-in the UK would operate on Single Double Summer Time (SDST) (GMT+1 in winter, GMT+2 in summer). This will provide one extra hour of daylight in the evening throughout the year. However, mornings would be darker for one extra hour. SDST would put the UK on the same time as most countries in Central and Western Europe, which also advance clocks in their summer.

The evenings are the time during which most people in the UK are active. It is, therefore, suggested that lighter evenings will primarily:

- Reduce energy consumption; as less lighting and possibly heating may be required.
- Reduce road traffic accidents; as roads will be lighter for longer in the busier evenings.

An experiment with UK time from 1968-1971 retained summer time (GMT+1) throughout the year. This resulted in fewer road traffic accidents.

Darker mornings have traditionally been opposed by agricultural workers, construction workers and postal workers who are in need of light at earlier times of the day.

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I Day length and time zones

A. Longitude effects

Britain is in the Greenwich Mean Time (GMT) time zone, along with other countries at the same longitude position including West Africa, Iceland and Ireland. When it is midday in the GMT time zone it is dawn in the USA to the west, dusk in India to the east and midnight in Fiji, on the other side of the earth.

For every 15 degrees of longitude, the international time zone system changes by one hour. Much of Europe is slightly to the east of us and one hour ahead of us. This time zone, GMT+1 hour, is called the Central European Time zone (CET). Greece, slightly further to the east again, operates on GMT+2 hours. A map of European time zones is provided in Appendix I.

B. Latitude effects

The length of days changes through the year because the earth spins on a tilted rather than a vertical axis. In winter the northern hemisphere and UK are tilted away from the sun, so nights (the time in shadow) are long and days, when the sun appears low in the sky, are short. In summer we are tilted towards the sun, which appears high in the sky, giving us more time in the light (days are long and nights are short). In the southern hemisphere the opposite effect results.

At the Poles the effect is at its most extreme, causing the summer nights of the midnight sun, when the sun is so high in the sky that it never sets. Conversely, at the Equator the effect is negligible. The tilted spin of the Earth is the reason why the changes in daylight hours throughout the year are more pronounced in northern Scotland than they are in southern England.

C. Shifting the clocks

Since days are longer in the summer, by putting the clocks ahead one hour during the long days an hour of daylight occurs in the summer evenings. This can be used for work or leisure, rather than possibly being wasted in the mornings while people may be still asleep. Exactly the same effect could be achieved by getting up, going to work, and finishing work an hour earlier, which is common practice in Norway and Sweden. Either way, effectively the sun rises one hour later and sets one hour later; the idea is that the extra morning darkness will not be noticed by most people, but the extra hour of light in the evenings will be a bonus for many.

Problems arise when morning rather than evening daylight is considered most important; this is why the traditional opponents of darker mornings have been postal workers, the construction industry, farmers and the Scots, who have a shorter winter day anyway and voice concern particularly about children going to school on dark mornings.

Of course altering our clocks or activity patterns has no effect whatsoever on the fact that daylight hours are short in the winter. Regardless of the time zone within which the various European countries operate, since they are all quite high up in the northern

hemisphere, they all adopt summertime to make use of the longer summer days, and shift back in the winter when days shorten again.

D. Adoption of summertime in the UK and Europe

The 1908 *Daylight Saving Bill* was the first attempt in the UK to move clocks forward one hour in summer. The idea was to provide more daylight hours after work for the training of the Territorial Army and for recreation, to reduce shunting accidents on the railways and to reduce expenditure on lighting. There were objections that the proposals would disrupt traffic with Europe, interfere with business transactions with the USA, keep children up late and cause difficulties for the agricultural community, and the attempt failed.

During the Great War in 1916, Germany initiated the adoption of summertime when it introduced daylight saving in the summer, and France, Portugal, Italy, Holland, Denmark, Norway, Sweden and Austria followed suit.

This annulled some arguments against summertime adoption by the UK. To save energy and help the war effort, the *Summer Time Act 1916* advanced the clocks in Great Britain for one hour from 21 May until 1 October. After a year of this a consultation exercise indicated that the system was very popular. Since then summertime has always been adopted in the UK, although there have been periods, notably during the Second World War, when the start and end dates have been altered or more substantial clock shifts have been made. From 1968-71 the British Standard Time experiment was adopted in the UK, when summertime (GMT+1) was retained throughout the year, but the experiment was abandoned following a vote in the House.

By the mid 1970s, most of Europe had moved into the Central European Time zone. Various Member States had also adopted summertime, with their own dates for starting and ending. After a confusing situation had developed, in 1975 a European Commission working party proposed that the dates of summertime should be harmonised. No change was recommended on time zones; because of their longitude it was accepted that the UK and Ireland would remain one hour behind the other countries. Because of their northern latitude and being reluctant to shorten their days in September, the UK and Ireland were also allowed to keep the end of October rather than the end of September as the date of return to wintertime.

Since 1980 European summertime arrangements have been laid down by a series of EC summertime Directives. After the sixth Directive was adopted the Commission noted that the system of two end dates was giving rise to transport and communication problems, and suggested that the end of October would be the most appropriate date to adopt for the return to wintertime, especially since a Eurobarometer survey in all Member States had revealed that public opinion was 'very much in favour of having summer time extended until the end of October'.

The seventh Directive on summertime arrangements was implemented in the UK under the *Summer Time Order 1994* (SI 1994/1357). In 1996 and 1997 the Directive harmonised the on- and offset of summertime by making the other Member States change their clocks at the same time as the UK (at the end of October, rather than

September). This link was made permanent under the *Summer Time Order 2002* (SI 2002/262).

Though the clocks are now changed at the same time throughout Europe, the UK remains in the GMT rather than the CET zone, so the one hour time difference between the UK and Ireland and most of the rest of Europe is unaffected. The *Energy Saving (Daylight) Bill* seeks to change this by converting England, and providing the rest of the UK with the option of converting, to Single Double Summer Time (SDST) (synonymous with CET; GMT+1 in winter, GMT+2 in summer)

II The British Standard Time (BST) experiment

In the 1960s, the Government decided to test the support for continuous summertime. A three year experiment was introduced from 1968-1971 when summertime (GMT+1) applied throughout the year. This was given the name British Standard Time (BST). The Government gave an undertaking that a comprehensive review would be carried out before any decision was taken at the end of the BST experiment. The White Paper which followed in 1970 said that it was impossible to quantify advantages and disadvantages and that a final decision would need to rest largely on a qualitative decision.

A. Road casualties

The Department of Transport's Transport and Road Research Laboratory (TRRL) initial calculations made after the BST experiment indicated that more people were injured in the darker mornings, but fewer people were injured in the lighter afternoons. The initial 1970 estimates used data from earlier winters for comparison and were, over two winters, an increase of 900 people killed or seriously injured (KSI) in the morning, but a decrease of 3600 KSI in the evenings, giving a net reduction of 2700 KSI.¹

At the time it was pointed out that such calculations did not take into account the fact that drink/drive legislation was passed in 1969. The TRRL itself acknowledged that the basis of the initial 1970 calculations is not precisely known, and it has carried out more sophisticated reanalyses of the data.

The TRRL recalculated the BST experiment figures comparing them with accident data from the *subsequent* years 1969-1975. The TRRL says that the after-effects of the introduction of drink/drive legislation in 1967 can be allowed for²;

...only two parts of the day are relevant; the hours in the morning when sunrise occurred during the winters (with either BST or GMT) and the hours in the afternoon when sunset occurred. By focusing on these two periods, the effects of BST should be shown most clearly; BST could have no effect on the number of accidents occurring at those times of day which would be either light or dark

¹ *The potential effects on road casualties of Double British Summer Time*, TRRL Research Report 228, DoT 1989 p.2

² *The potential effects on road casualties of Double British Summer Time*, TRRL Research Report 228, DoT 1989 p.2

under both systems. In particular, the analysis should not be confused by the after-effects of the drink/drive legislation implemented in the autumn of 1967, which were largely confined to the late evening.

The TRRL's re-analysis agreed broadly with the earlier estimates although the morning increase was slightly higher, giving for one winter (1969-70) a net reduction of 1120 KSI and of 2340 injured.

The new analysis provided some important extra information. A detailed analysis of fatalities was included for the first time and the net reduction in these for all ages was 230 over one winter. This represented a reduction of 8% compared with the total number of fatalities for that winter (2960). Since the reduction in the number KSI was 3% and for all casualties was 2%, the benefits of the BST experiment were greatest for the most serious accidents.

The TRRL was also able to split the data into road user groups, age groups and geographical regions. The number of injured cyclists rose, but the 5-15 year old age group, pedestrians and those living in Central England and Southern Scotland benefitted especially from the experiment. The only region in which the number of injuries rose was Northern Scotland (a net increase of 29 KSI in Northern Scotland although there was still a net decrease of 57 casualties; see table below). Unfortunately the area of the regions used was large, presumably because smaller areas would have provided insufficiently large numbers for analysis, so Northern Scotland as defined included much of the country. However, by these large regions, the casualty reductions associated with the retention of BST in the winter of 1969-70 were as follows (net reductions; there is only one increase):

	Fatalities	KSI	All casualties
SE England	-54	-339	-1006
SW England	-	-77	-225
Midlands	-26	-342	-450
Wales	-	-51	-30
N England	-78	-222	-251
S Scotland	-	-136	-333
N Scotland	-	29	-57

Where the casualty data were insufficient to complete the calculations, a blank is shown.

The TRRL report concluded that

In summary, the retention of BST during the winter of 1969-70 led to a reduction of about 230 in the number of fatalities, 1100 in the number killed or seriously injured, and 2350 in the number injured ... BST was especially effective in reducing the number of fatalities. The groups which benefitted most from the change were those aged 5-15, pedestrians and those living in Central England and Southern Scotland.

The decision to terminate the experiment led to increased fatalities and casualties, especially among those groups which had benefitted most from the retention of BST during the winter...³

The TRRL went on to simulate the effects of introducing Central European Time in the UK by considering changes in casualty totals under the altered lighting conditions that would occur, using appropriate statistical modelling techniques. The TRRL concluded that had CET been applied in 1987:

- 160 fewer people would have been killed (3.1% of the national total)
- 810 fewer people would have been killed or seriously injured (1.2%)
- 2060 fewer people would have been injured (0.7%).

B. The debate following the BST experiment

The experiment was debated in the Commons on 2 December 1970⁴ and by a vote of 366 to 81 the British Standard Time experiment was discontinued. This overwhelming rejection was perhaps surprising since at the beginning of the debate, the then Home Secretary, Reginald Maudling quoted polls carried out 'over the whole country' which showed that in mid-winter 50% of the population had favoured staying on BST and 41% wanted to return to GMT; in the spring these figures were 51% and 39% respectively. However, the Commons vote probably reflected in part fears about the safety of children on their way to school; little faith was placed in the accident figures available which showed a net decrease in road accidents. In addition, the poll figures for Scotland alone were 61% of people favouring a return to GMT and only 34% wanting to stay on BST.

Hamish Gray, Member for Ross and Cromarty, making his maiden speech, summed up the objections to the BST experiment. His arguments were echoed by several other Members during the debate and probably encapsulate the reasons why the experiment was discontinued;

...the National Union of Agricultural and Allied Workers wrote to me

"Our union is overwhelmingly opposed to the continuation of BST".

The difficulties which have been created are immense. They include the care of animals; farm vehicles using unlit country roads, frequently in bad weather conditions; getting stock to market, with the impossibility of loading before daylight and the subsequent disorganisation of transport; the intense cold before sunrise; the hopeless situation on building sites even where the site is lit - and many are not. Men face dangers because of shadows and icy conditions, and many building operations which are relatively easy in daylight become impossible in artificial light. Postmen, Post Office engineers, municipal workers and delivery men all suffer a marked decline in their working conditions. BST causes hazards

³ *The potential effects on road casualties of Double British Summer Time*, TRRL Research Report 228, DoT 1989 p.2

⁴ HC Deb 2 December 1970 cc1331-1422

for children on their way to school, and for the elderly. Housewives who go early to shop or to work suffer difficulties.

Since the experiment it has been alleged by groups in favour of change that the outcome of the vote was affected by powerful lobbying by farmers, the building industry and the Scots, who had overwhelmed a 'silent majority'. It has also been alleged that this lobbying was helped by the press producing on their front pages 'lurid photographs of a few children injured on the way to school in the dark'.

According to a Policy Studies Institute review in the mid 1990s:

The small increase in the road accidents on the darker winter mornings, especially among children on their way to school, which occurred during the experimental period of 1968 to 1971 of maintaining BST throughout the year seems to have been so imprinted on the public memory that the far more substantial decrease stemming from the lighter late afternoons in the winter and evenings in the summer has been overlooked. The number of deaths and serious injuries and of damage-only accidents on the roads would now be reduced by over 600 a year, with an estimated saving of over £200 million. All the main organisations concerned with safety have indicated their support for the adoption of [CET].⁵

III Other attempts to legislate

A. Bills in the Lords

1. Central European Time Bill [HL] 1994

Viscount Mountgarret introduced his *Central European Time Bill* into the House of Lords during the 1994-5 session. The Bill sought to move England, Wales and Northern Ireland, but not Scotland, into Central European Time. During the Bill's second reading Viscount Mountgarret pointed out that the Government had been considering the issue of whether to move to CET for some considerable time, and Lord Jenkins agreed that there had been 'long years of procrastination, hesitation and postponement'.⁶ However, along with several other Peers who spoke in the debate, Lord Jenkins had reservations about creating a time frontier between England and Scotland. The Bill was sent to the Commons on 20 February 1995, but made no further progress.

2. Western European Time Bill [HL] 1995

Introducing his Bill for its second reading in the Lords on 29 November 1995, Viscount Montgomery said it covered the whole of the UK, and that even the most severe opponents of change would agree that the UK must remain in one time zone.⁷ He said that one of his objectives was to stop the Government from sitting on the fence. This Bill also sought to establish British summertime in winter (GMT+1) and British double

⁵ *Time for Change: Setting clocks forward by one hour throughout the year: A new review of the evidence*, Mayer Hillman, PSI 1993.

⁶ HL Deb 11 January 1995 cc243-84

⁷ HL Deb 29 November 1995 cc660-90

summer time (GMT+2) in the summer. Although this would have effectively moved us into CET, the Bill's title was intended to reflect the geographical area comprising the UK, France, Germany, Spain, Switzerland and the Benelux countries. The Bill was passed at third reading on 20 December ⁸ and was sent to the Commons where it failed.

3. Lighter Evenings (Experiment) Bill 2005

Most recently the *Lighter Evenings (Experiment) Bill* under Lord Tanlaw was introduced and first read in the House of Lords on November 30 2005. Again the Bill proposed to advance time by one hour throughout the year, though this time for an experimental period. During the second reading debate on 24 March 2006 the argument for advancing the clocks was set out by the Bill's sponsor: ⁹

- Road Safety:

The Royal Society for the Prevention of Accidents—RoSPA—confirms the conclusion with the results of their 2002 survey, that this Bill, during the period of lighter evenings, will save at least 100 lives on the roads every year. No doubt the noble Baroness, Lady Billingham, and the noble Lord, Lord Faulkner, who are office-bearers in that association, will be able to confirm that more officially than I can.

Nevertheless, a number of people have written to me and have appeared on talkback radio programmes. They are worried about the safety factor with a lighter morning school run, which they feel must be superior to a darker morning school run. However, the facts are clear, and were stated in a debate in the House of Commons on the *British Time (Extra Daylight) Bill* in 1996:

"Only 18 per cent. of all accidents involving schoolchildren occur on the journey to or from school. Some 82 per cent. of accidents occur after school".—[Official Report, Commons, 19/1/96; col. 992.]

That is an essential factor that we must remember throughout the debate. It is an unnecessary worry for those people who think that darker mornings are going to mean more accidents; statistics say otherwise.

- Quality of Life:

In addition to concerns over road safety, I have received submissions from many differing interests who advocate a change from the status quo of lighter mornings. They fall loosely under the heading, "quality of life", and range from walking the dog in daylight, to deterring early evening crime, to saving more than £1 billion a year through increased tourism, due to an extended season. Does the Minister who is to reply not agree that lighter evenings will also allow schoolchildren to boot a ball about before visiting the chip shop or slumping in front of the family television?

⁸ HL Deb 20 December 1995 c1671

⁹ HL Deb 24 Mar 2006 cc459-64

British Association of Leisure Parks, Piers and Attractions (BALPPA) and similar bodies involved with leisure and sports pastimes, have said that they would strongly support the experiment proposed in the Bill.

- Energy Saving

In my view, there is a good possibility that the adoption of SDST for an experimental period will save energy and make a positive contribution to the carbon emissions equation. On 26 January, the Minister for Science and Technology in the debate of my noble friend Lord Montgomery of Alamein disagreed and quoted the Building Research Establishment's absurd and unproven assertion that energy use would increase under SDST due to, "people leaving lights on all day".—[*Official Report*, 26/1/06; col. 1384.]

My wife says that I am always leaving the bathroom lights on, but I do not think that all of the people will leave all of the lights on all day to the extent that it would not save energy.

Let us not forget that the father of daylight saving was Benjamin Franklin. He calculated in 1784 that Parisians burned 127 million candles unnecessarily every year, because they did not change their clocks. He proposed a form of daylight saving for that city and suggested that there should be a tax, "on every window with shutters to keep out the light of the early morning sun".

Is the Minister aware also that in 1909, William Willett, who was the great-great grandfather of the popular singer Chris Martin of Coldplay, drafted Bills for Parliament's acceptance proposing daylight saving in this country as a means of conserving energy? He did not succeed, but Daylight Saving Time was adopted in the Summer Time Act of 1916—a year after his death. That Act was designed principally to save coal during the First World War and was followed by the Summer Time Act 1925.

The Policy Studies Institute's *Making the most of daylight hours* was put forward by the noble Baroness, Lady Thatcher, when she was Prime Minister. She was convinced that it could lead to great energy savings. Former Prime Minister Edward Heath introduced the Summer Time Act 1972, which was well-intended, but seriously mistaken, but gave us today's status quo.

I do not know what noble Lords opposite believe, but they are keen on "green" matters these days, so perhaps they would look at this Bill with a view to incorporating its proposals in a future manifesto. Why did the Minister of Science of Technology not mention during my noble friend's debate the California Energy Commission's detailed study of the effects of daylight saving on electricity use? Is he not aware that the commission concluded that there would be savings of, "hundreds of millions of dollars because it would shift electricity use to low demand, (cheaper) morning hours and decrease electricity use during the higher demand hours"?

If that applies in California—and it is a detailed study which I commend the Minister to read—is there any good reason why the same kind of savings cannot be made here, especially as there is not the same demand for air conditioning during the summer.

- Harmonization with Europe:

The application of SDST in this country would have the added bonus of harmonising with Central European Time (CET). I would have thought that the proposed experiment would be of benefit to the travel and communication industries as well as to the City of London. Yet again, the Minister seemed to disagree with that concept in his statement at the close of my noble friend's debate.

It has been suggested to me in a number of letters received regarding the Bill that there could be problems with rescheduling planes and trains in order to adapt to the new timings during the experimental period. Initially, yes, of course, there would be; but once in place there would surely be less rescheduling if our clocks and travel schedules were in harmony with those in Europe—which they are not at present. There is also the added benefit that the present early morning flights over London and into Heathrow as early as 4.30 am would switch to arriving at 5.30 am under single/double time schedules. Surely no one could object to that.

B. Bills in the Commons

1. British Time (Extra Daylight) Bill 1995

John Butterfill came top of the Private Members Bill ballot and introduced his *British Time (Extra Daylight) Bill* in 1995. This had the same aims as Viscount Montgomery's bill, to move us into CET, and was read in parallel.

There was passive Government support for the Bill, with the notable exception of the Scottish Office. Mr Forsyth, the Secretary of State for Scotland, came out strongly against the Bill, and was reported to have persuaded the Cabinet not actively to lend its support to or provide any extra time for the measure, saying that it is 'misguided, unnecessary and would be deeply damaging in Scotland'¹⁰

2. Lighter Evenings Bill 2004

On 8 June 2004 Nigel Beard's Private Members Bill, the *Lighter Evenings Bill 2004*, received its first reading. He outlined the Bill's proposals:

During the winter, time would be Greenwich mean time plus one hour instead of simply Greenwich mean time, as it is now. In the summer, time would be Greenwich mean time plus two hours instead of Greenwich mean time plus one hour. That would increase accessible daylight by approximately an hour in the evenings throughout the year and postpone sunrise by about an hour.¹¹

He offered justification of the Bill:

¹⁰ 'Ministers march to Euro-time' *Guardian* 13 December 1995 p.3; 'MPs get free vote on harmonising daylight hours' *Daily Telegraph* p.12 and 'Daylight hours set for veto' *Financial Times* p.8; both 14 December 1995; 'Times may not be a-changin'' *Financial Times* 22 December 1995 p.12

¹¹ HC Deb 8 June 2004 c146

At the moment, United Kingdom clocks are aligned with Portugal but all year round are one hour behind 16 of the 25 member states of the European Union, including France, Germany, Belgium, Denmark, the Netherlands, Spain and Sweden. The proposal would align time in England and Wales with our major continental neighbours all year round. Those countries accounted for £137 billion of Britain's trade in 2003. That is 50 per cent. of Britain's exports of goods and services, affecting 3 million United Kingdom jobs. Under the proposal, the UK working day would coincide with the working day in that huge market, with obvious benefits for UK competitiveness and business efficiency.

Airline, ferry and Eurostar schedules would be simpler. Out of 25 million inbound visitors last year, 14 million came from countries that would be in the same time zone under these proposals.

Tourism is a key British industry, accounting for 4.5 per cent. of gross domestic product and supporting just over 2 million jobs. The British Resorts Association and Visit Britain support the Bill on account of the benefits it would bring to the tourist industry. It would extend the peak summer tourist season for foreigners and encourage more domestic day trips and weekend breaks. More of those short trips are taken in March and April and September and October than in summer. For organisations such as the National Trust and English Heritage, the extra hour of daylight in the evening is advantageous for those attractions that close at dusk. Taken as a whole, it is estimated that the extra hour of accessible daylight could add £3 billion a year to an industry worth £76 billion in 2004.¹²

The Bill only extended to England and Wales, leaving the Northern Ireland Assembly and the Scottish Parliament to decide whether to adopt the measures. The Bill ran out of Parliamentary time.

IV Consequences of changing the clocks

A. Crime

Darkness is often associated with crime and it is felt that lighter evenings, rather than lighter mornings, are more likely to result in reduced crime statistics. The fear of crime, due to walking home in the dark, may be reduced by having lighter evenings. This may, however, be offset by having to leave home in the dark to get to work.

B. Leisure and tourism

The outdoor activity of many groups in the population is limited by the onset of dusk. A switch to CET would give an average daily gain of 55 minutes of accessible daylight hours in the evenings. Lighter evenings would give more time for gardening (the most common outdoor leisure activity) and for outdoor sports. Half of the ten most popular adult sports are daylight dependent.

The British Tourist Authority has estimated that a change to CET would probably increase turnover in tourism by over £1billion and extend the tourist season. UK

¹² HC Deb 8 June 2004 cc146-7

residents might well be encouraged to take more short day trips and weekend breaks. The British Association of Leisure Parks, Piers and Attractions (BALPPA) said it would support the experimental move to SDST proposed in the *Lighter Evenings (Experiment) Bill* (see section III above).¹³

C. Communications, trade, transport

Bringing the UK into line with Central European Time (CET) would almost certainly increase communication with the rest of the EU since more of the working day would coincide. The time overlap with the Middle and Far East would be increased but the overlap of the working day with North America would decrease by an hour; the New York opening of the market would move to 3pm London time.

Harmonisation with CET may make life easier for travel industries (ferries, airlines and rail operators) which currently have to take local time differences into account in their scheduling. This would mean an upfront re-negotiation of access to ports and stations.

D. Agriculture

There is concern that adoption of SDST may impact on farmers who have to get up early in the morning to perform routine tasks, such as the milking of cows in time to catch the milk lorry. Under SDST these may have to be performed in darkness.

However a spokesperson for the NFU announced, following the first reading of the *Energy Saving (Daylight) Bill*, that:

"The benefit of an extra hour of morning daylight for farmers is no longer really an issue - before modern-day machinery and lighting, daylight was crucial, but now farmers have the technology to deal with it."¹⁴

E. General well being and health

In general, much of the population does not take enough exercise. Putting the clock forward an hour could increase opportunities for exposure to daylight and encourage outdoor activity that would lead to some improvement in health. Other putative health effects would range from increased vitamin D synthesis in the body to less physical and mental fatigue, and improvements for some skin diseases.

It has been estimated that around 2.5% of the population can meet the criteria for Seasonal Affective Disorder (SAD) during the winter months.¹⁵ It has been suggested that SAD may be related to insufficient light stimulation reaching the hypothalamus in the brain. The result of this is disrupted sleep patterns, general symptoms of depression, and an indicative change in secretion levels of the hormone melatonin by the pineal gland.

¹³ HL Deb 24 March 2006 c460.

¹⁴ 'Get England in sync with Europe, says MP, but Scots can lag behind', *Scotsman*, 13 December 2006

¹⁵ 'North east 'suffers winter blues', *BBC News*, 5 December 2005:

<http://news.bbc.co.uk/1/hi/scotland/4500336.stm>

V Recent research

A. RoSPA

The Royal Society for the Prevention of Accidents (RoSPA) has voiced strong support for the *Energy Saving (Daylight) Bill*. They have compiled recent research in their Policy Paper on Single/Double Summer Time. The following is taken from the conclusion of the paper:

RoSPA supports the adoption of Single/Double Summer Time. An online vote conducted by RoSPA shows that this is also supported by 86% of people who responded.

The most recent research into the potential effect of SDST on road casualties concluded that significant reductions in casualties would be achieved if the UK adopted Single/Double Summer Time. This confirms earlier research which showed that the 1968/71 experiment saved around 2,500 deaths and serious injuries each year of the experiment.

The latest research estimated that a move to SDST would result in around 450 fewer road deaths and serious injuries, including between 104 and 138 fewer deaths.

A reduction would be achieved in Scotland as well, albeit slightly less than for Great Britain as a whole.

Although there would be more casualties in the morning during the Winter, these would be outweighed by the reduction in casualties due to an hour of extra daylight in the Winter evenings, producing a net reduction.

Extra evening daylight protects vulnerable road users like children, the elderly, cyclists and motorcyclists, making them more visible to motorists. There are more accidents in the afternoon rush hour during the week than in the morning. Motorists are more tired after a day at work and concentration levels are lower. Children tend to go straight to school in the morning but may deviate in their journey home, making stops, thus increasing their exposure to the road environment. Social trips are generally made in the afternoon/evening, often on the way home from school/work.

However, many people are still cautious about accepting SDST and many firmly oppose it. A move to SDST is generally opposed by those industries whose workers rise early and utilise morning light, for example some farmers, postal workers, those involved in the collection and delivery of milk and the building industry.

Tourism, leisure and sporting organisations generally support a move to SDST, welcoming the increased opportunities for activity presented by more daylight on weekday evenings. Road Safety organisations are persuaded by the research on casualty reduction and support the adoption of SDST.

Historically, many people and organisations in Scotland have opposed the move to SDST, citing the darker mornings (dawn in the far north of Scotland in the

Winter months would be after 10am) as unwelcome and leading to an increase in road casualties. In fact, the most recent research confirms a net reduction in casualties, even in Scotland.

Four Scottish organisations responded to RoSPA's survey. Apart from the Scottish Football Association, all opposed a change to SDST. The Scottish FA welcomed the increased opportunities presented by more afternoon daylight and the possibility of harmonisation with Europe. The opposition from the other organisations derived from a belief that road casualties in Scotland would increase and that darker mornings would be hazardous. One organisation doubted that legislation was appropriate.

Although the power to legislate about Summertime has not been devolved to the Scottish Parliament, there are those who say it should be. Some supporters of SDST responding to the RoSPA survey suggested that Scotland should be able to set its own time and could remain in the current time zone if England and Wales aligned with Europe. The arguments for and against such a split are beyond the remit of this paper.

It is clear that the decision of whether to move to SDST is never going to be purely a quantitative one (i.e., based on statistics) because people's views are too disparate. Therefore, the judgement will partly be a qualitative one. However, RoSPA believes that the effects on road safety are the most important and persuasive considerations.

The only way to reach a conclusion about the effects of a move to SDST in this country, to align the UK clock with that of its European neighbours, is to conduct an experiment similar to that held during 1968/71. A trial implementation of SDST over at least two years, with modern evaluation methods and all data correctly and comprehensively recorded, will result in data that is unequivocal in terms of casualty savings and could cover much wider issues also. Such an experiment would give people an opportunity to experience the change for themselves and may be useful in crystallising opinions.

Since the 1968/71 experiment, the road environment and people's travel habits have changed enormously. Society is more reliant on the car, fewer children walk or cycle to school, opportunities for leisure activities are significantly greater, people take holidays more frequently and overseas travel is much more common. The advancements in communication technology have opened up the opportunities for worldwide trade even further. Even weather conditions are changing as the effects of global warming are felt. None of the research conducted to date is able to address these factors successfully, hence the need for a new trial.¹⁶

B. California Energy Commission

A study was released in May 2001 by the State of California's Energy Commission to see if creating an early DST or going to a year-round DST would have helped with the

¹⁶ RoSPA, *Single/Double Summer Time Policy Paper*, October 2006:
http://www.rospa.com/roadsafety/info/summertime_paper2006v2.pdf

electricity problems the state faced in 2000-2. Its findings are summarised in the introduction:

Both Winter Daylight Saving Time (DST) and Summer-season Double Daylight Saving Time (DDST) would probably save marginal amounts of electricity — around 3400 MegaWatt hours (MWh) a day in winter (one half of one percent of winter electricity use) and around 1500 MWh a day during the summer season (one fifth of one percent of summer-season use).

Winter DST would cut winter peak electricity use by around 1100 MW on average, or 3.4 percent. Summer Double DST would cause a smaller (220MW) and more uncertain drop in peak, but it could still save hundreds of millions of dollars because it would shift electricity use to low demand (cheaper) morning hours and decrease electricity use during higher demand hours.

Figure ES1 reports California total peak reductions ranging from 1240 MW in January for Winter DST to 150 MW in July for summer-season double DST Summer-season. Double DST effects represent 0.6 percent of average peak demand for the period.¹⁷

C. Transport Research Laboratory

In 1998 the Transport Research Laboratory and University College of London, used accident data from reports from Great Britain and the US. The altitude of the sun was calculated for each accident; sharp changes in accident rates were found for those periods of the day that moved from darkness to light at the dates of changing of the clocks. Extrapolation of rates by sun altitude suggested that over one hundred lives could be saved each year by shifting the clocks forward one hour. The following is an abstract of the Report:

It has been suggested that Single Double Summer Time (SDST) should be adopted in the United Kingdom. Under this system of timekeeping, the sun would rise and set throughout the year one hour later by the clock than at present. This report considers the likely effect of this change upon the number of road accident casualties. Trigonometrical equations are used to calculate the altitude of the sun at any date and time for any point in the country. This allows the light level at the time of any accident to be represented by the altitude of the sun, and added to the basic accident data. Two alternative statistical models have been used to analyse accident data for Great Britain for periods between 1969 and 1994 to investigate the effect of darkness on the number of casualties. These show that darkness leads to more casualties, and that the effect increases with casualty severity. The study also analyses data for fatal accidents from USA for 1991-95. The adoption of SDST in Great Britain would transfer an hour of daylight from the morning, when there are relatively few casualties, to the afternoon and evening when there are more. It is predicted that this would reduce the number of people killed and injured in road accidents. The estimates of the reduction in the number of deaths per year range between 104 and 138, depending upon the assumptions made.¹⁸

¹⁷ California Energy Commission, *Effects of Daylight Saving on California Energy Use*, May 2001: http://www.energy.ca.gov/reports/2001-05-23_400-01-013.PDF

¹⁸ TRL, *A New Assessment of the Likely Effects on Road Accidents of Adopting SDST*, 1998.

D. Portuguese experiment

Portugal, which is in the same time zone as the UK and Ireland, converted to CET in 1966–76 and 1992–96. It was hoped that during the 1992-96 experiment traffic accidents would be reduced, and energy savings would be noticed. Lord Sainsbury, the Parliamentary Under-Secretary of State for the Department of Trade and Industry, stated that this was not the case during the second reading of the *Later Evenings (Experiment) Bill*.

The noble Lord, Lord Tanlaw, tried to explain away the situation in Portugal, but the point is that it did in fact move to Central European Time in 1992, but reverted to Greenwich Mean Time in 1996. It was concluded that the small energy savings could not justify the inconvenience the change created. It caused particular inconvenience through its impact on school children, which became a big issue in Portugal. The change had a very disturbing effect on children's sleeping habits as it would not get dark until 10 or 10.30 in the evening. It was difficult for children to go to bed early enough to have sufficient sleep. This had inevitable repercussions on standards of learning and school performance. Difficulties were also encountered with children leaving for school in complete darkness. Moreover, insurance companies in Portugal reported a rise in the number of accidents.¹⁹

VI Energy Saving (Daylight) Bill 2006

Tim Yeo's Bill was introduced for first reading to the House of Commons on 13 December 2006, accompanied by the following press release:

Energy Saving (Daylight) Bill

11 December 2006

Tim Yeo, who has drawn second place in this year's Private Members Bill ballot, will introduce a Bill to move the clocks forward by one hour throughout the year.

This means that in the summer the time would be British Summer Time + 1 hour and in the winter it would be Greenwich Mean Time + 1 hour.

Tim Yeo said, " According to the Royal Society for the Prevention of Accidents moving the clocks forward in this way would save over one hundred lives every year by cutting the number of road accidents.

"Recent research from Cambridge University suggests it would also save energy by reducing demand for electricity and thereby address the threat of climate change by cutting carbon emissions.

"It is ten years since the House of Commons considered this subject. I hope that Parliament will now approve a simple change which will benefit everyone by creating a safer and greener country."

¹⁹ HL Deb 24 Mar 2006 c479

The Bill will allow separate votes in the Scottish Parliament, the Welsh Assembly and the Northern Ireland Assembly to decide if the change should apply in those parts of the United Kingdom.

The full text of the Bill, whose sponsors are drawn from all three main parties, will be published early in the New Year. Second Reading is scheduled for January 26th.²⁰

The *Energy Saving (Daylight) Bill*²¹ closely resembles Lord Tanlaw's *Lighter Evenings (Experiment) Bill*, covered in section III above.

- Clauses 1, 2 and 3 will advance time in England to one hour ahead of Greenwich mean time during winter and to two hours ahead of Greenwich mean time during summer. This change will come into effect on 26th October 2008 and will cease on 25th October 2011 (Clause 9).
- In Clauses 5, 6 and 7 the Scottish Parliament is given the power to "opt-in" to the change in respect of Scotland, as is the National Assembly for Wales in respect of Wales. If the Northern Ireland Assembly is not suspended, it may "opt-in" to the change in respect of Northern Ireland; if it is suspended, the Secretary of State is given the power to do so.
- In addition to the measures in Lord Tanlaw's Bill, it will also provide for the creation of a review panel, known as the Daylight Saving Review Panel, to monitor and report on effects of a change in time if the Bill receives Royal Assent. Clause 4 states the Panel's report must include reference to road traffic accidents, energy consumption and ill health. Expenses for the panel are provided for in Clause 8.

²⁰ <http://www.timyeo.org.uk/record.jsp?type=release&ID=31>

²¹ The Bill is at <http://www.publications.parliament.uk/pa/cm200607/cmbills/018/07018.i-i.html>

Appendix I: European time zones



Color	Time zone during the winter	Time zone during the summer
	GMT / WET (UTC)	
	GMT / WET (UTC)	BST / IST / WEST (UTC+1)
	CET (UTC+1)	
	CET (UTC+1)	CEST (UTC+2)
	EET (UTC+2)	EEST (UTC+3)
	MSK (UTC+3)	MSD (UTC+4)

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²² http://commons.wikimedia.org/wiki/Commons:GNU_Free_Documentation_License

²³ http://en.wikipedia.org/wiki/Image:Time_zones_of_Europe.png

Appendix II: Acronyms

BST	According to context, either British Standard Time (adopted during the experiment; GMT+1 throughout the year) or British Summer Time (GMT+1 during the summer)
CET	Central European Time (synonymous with SDST; GMT+1 in winter, GMT+2 in summer)
GMT	Greenwich Mean Time
SDST	Single Double Summer Time (synonymous with CET; GMT+1 in winter, GMT+2 in summer)
UTC	Coordinated Universal Time