

# DAYLIGHT SAVING TIME

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## HEARINGS BEFORE THE COMMITTEE ON COMMERCE UNITED STATES SENATE NINETY-THIRD CONGRESS

FIRST SESSION

ON

**S. 385**

TO AMEND THE UNIFORM TIME ACT OF 1966 TO PROVIDE  
THAT DAYLIGHT SAVING TIME BE USED FROM MEMORIAL  
DAY TO SEPTEMBER 30

**S. 1260**

TO PROVIDE THAT DAYLIGHT SAVING TIME SHALL BE OB-  
SERVED ON A YEAR-ROUND BASIS

**S. 2568**

TO EXTEND DAYLIGHT SAVINGS TIME DURING THE PERIOD  
FROM THE LAST SUNDAY IN OCTOBER 1973, THROUGH THE  
LAST SUNDAY IN APRIL 1974

**S. 2602**

TO PROVIDE THAT DAYLIGHT SAVING TIME SHALL BE OB-  
SERVED ON A YEAR-ROUND BASIS

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NOVEMBER 9 AND 12, 1978

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Serial No. 93-49

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(II)

## CONTENTS

	Page
Opening statement by the Chairman.....	1
Opening statement by Senator Stevenson.....	2
Opening statement by Senator Moss.....	5
Text of bills:	
S. 885.....	6
S. 1260.....	8
S. 2568.....	10
S. 2602.....	12
Agency comments on S. 885:	
Department of State.....	16
Department of Transportation.....	16
Department of the Navy.....	17
Department of the Interior.....	17
Civil Aeronautics Board.....	18
Agency comments on S. 2568, Interstate Commerce Commission.....	19

### CHRONOLOGICAL LIST OF WITNESSES

#### NOVEMBER 9, 1978

Halpern, Dr. Irwin P., Deputy Assistant Secretary of Transportation, Office of the Assistant Secretary for Policy, Plans, and International Affairs; accompanied by Stephen L. Grossman, Assistant General Counsel for Regulation, Office of the Secretary; and Dr. John Gibbons, Director, Energy Conservation, Department of the Interior.....	27
Prepared statement.....	40
Harris, William R., attorney, Social Science Department, Rand Corp.....	66
Roddis, Louis H., Jr., vice chairman, board of directors, Consolidated Edison Corp.; accompanied by Alex Radin, American Public Power Association.....	52
Prepared statement of Mr. Roddis.....	56
Prepared statement of Mr. Radin.....	64
Van Deerlin, Hon. Lionel, U.S. Representative from California.....	19
Prepared statement.....	23
Wells, T. Graham, assistant manager of power, Tennessee Valley Authority; accompanied by Duane Dunlap, assistant general counsel.....	66

#### NOVEMBER 12, 1978

Kirtley, Clyde, farmer and lawyer, Taylor County, Ky.....	97
Prepared statement.....	104
Koch, Bradley, staff engineer, National Rural Electric Cooperative Association; accompanied by Wally Rustad, legislative representative.....	87
Letter of November 19, 1978.....	94
Patton, D. Kenneth, administrator, Economic Development Administration, city of New York; Darrel H. Stearns, Federal legislative representative, city of Los Angeles; and Carl Tamaki, executive assistant to general manager, Department of Water and Power, city of Los Angeles.....	75
Letter of November 23, 1978.....	88

# IV

## ADDITIONAL ARTICLES, LETTERS, AND STATEMENTS

Amir, Ezra K., article in Electrical World.....	57
Ariyoshi, George R., acting Governor of Hawaii, letter of November 12, 1973.....	188
Barnum, Hon. John W., Secretary, Department of Transportation, letter of June 22, 1973.....	48
Bartley, Hon. David M., State representative from Massachusetts, statement.....	125
Burch, Hon. Dean, chairman, Federal Communications Commission, letter of November 24, 1973.....	124
Carter, Hon. Tim Lee, U.S. Representative from Kentucky, statement.....	96
Cook, Hon. Marlow W., U.S. Senator from Kentucky, statement.....	98
Egan, John E., Metropolitan Sanitary District of Greater Chicago, letter of October 26, 1973.....	106
Franks, John E., president, Franks Broadcasting Co., Inc., statement.....	127
Harris, W. R., article.....	130
Hosmer, Hon. Craig, U.S. Representative from California, statement.....	25
Ignatius, Paul R., Air Transportation Association of America, letter of November 13, 1973.....	120
Ison, Louis F., president, Kentucky Farm Bureau Federation, letter of November 6, 1973.....	99
Livesay, Ray, chairman, Daytime Broadcasters Association, letter of November 12, 1973.....	119
Mayne, Hon. Wiley, U.S. Representative from Maine, letter of October 31, 1973.....	105
McDermott, Albert L., Washington representative, American Hotel & Motel Association, letter of November 15, 1973.....	122
McIntire, Clifford G., legislative director, American Farm Bureau Federation, letter of November 8, 1973.....	95
Musicus, Milton, chairman, Interdepartmental Committee on Public Utilities, letter of November 9, 1973.....	119
Nedry, Alan M., Southern California Edison Co., letter of November 13, 1973.....	120
Nichols, Hon. Bill, State representative from Alabama, statement.....	127
"Opinion of the People," article in the Chicago Sun-Times.....	110
Pell, Hon. Claiborne, U.S. Senator from Rhode Island, statement.....	24
Roddis, Louis H., Jr., article.....	60
Rose, Don, editor and copublisher, Hyde Park-Kenwood Voices, statement.....	113
Saunders, Allen, vice president, Radio Akron, Inc., statement.....	129
Shadur, Milton I., letter of November 6, 1973.....	108
Stainback, Thomas N., president, New York Chamber of Commerce and Industry, letter of November 5, 1973.....	118
Tierney, Paul J., Transportation Association of America, letter of November 13, 1973.....	121
Toohey, William D., president, Discover America Travel Organizations, Inc., letter of November 8, 1973.....	112
Trowbridge, C. R., publisher, Yankee, Inc., letters of: October 30, 1973.....	117
November 2, 1973.....	117
"Two Sides to Daylight Saving," article.....	118

## DAYLIGHT SAVING TIME

FRIDAY, NOVEMBER 9, 1973

U.S. SENATE,  
COMMITTEE ON COMMERCE,  
*Washington, D.C.*

The committee met at 9:30 a.m. in room 5110, Dirksen Senate Office Building, Hon. Warren G. Magnuson (chairman of the committee) presiding.

### OPENING STATEMENT BY THE CHAIRMAN

The CHAIRMAN. The committee will come to order.

There will be four or five other Senators who will come, but we will have a long morning and we want to get started.

The chairman has a short opening statement at this time.

The United States faces the most serious energy crisis. Coincidence and international turmoil have combined to pose a series of threats to the national welfare, and as the days grow shorter and the Nation moves into deep winter, we must take those steps necessary to preserve services essential to our national economy and our comfort.

The Senate Commerce Committee today is holding hearings on four bills which would amend the Uniform Standard Time Act. Three of these bills would extend daylight saving time through the winter months for the purpose of conserving national energy. The President, in his address to the Nation on the energy crisis, proposed that Congress enact year-round daylight saving time. These hearings will give full and fair exposition of the significant issues to which year-round daylight saving time legislation must address itself.

The Commerce Committee has scheduled 2 days of hearings on this important matter. Today, we will hear from administration spokesmen from the Department of Transportation and the Department of the Interior. We will also hear from representatives of the utility industry and other experts who have studied the question of how much energy may be saved by year-round daylight saving time.

On Monday, the committee will receive testimony that will describe the impact of year-round daylight time on the large metropolitan areas and on the rural segment of the population, giving special consideration to the potential inconveniences that might occur to certain segments of the population.

Proposed year-round daylight saving time legislation have long been of high priority with the Senate and we are happy to see the President lend his support to this Senate initiative. I, personally, believe that

Staff member assigned to these hearings: Nicholas P. Miller.

every American must look, too, to his individual energy consumption patterns and begin to correct wasteful and unnecessary energy consumption where possible. A classic example of unnecessary energy consumption by our society may be continuing standard time when the simple expedient of shifting clocks 1 hour might result in significant energy savings.

Daylight saving time was extended year-round during World War II and at that time of national emergency it provided an effective method for conserving fuel resources.

I recognize an extension of daylight saving time will, of course, affect all of us. Many people find daylight saving time inconvenient. But if, at the conclusion of the hearings, the committee is satisfied that a substantial saving of energy can be obtained in this relatively painless manner, then the committee will move expeditiously.

I believe the energy crisis is most serious and I believe the entire Congress shares my determination to see that the Nation is not cold this winter and does not lose jobs this winter as a result of a short energy supply.

Every person must accept his individual responsibility to save energy where he can and the Congress must enact appropriate national energy conservation policies.

As a matter of fact, summertime daylight saving legislation originated many, many years ago in this committee, and we have looked at it constantly since. We are going to take these bills and take a look at them all and probably come out with a so-called committee bill containing the best parts of the bills that have been introduced.

The problems are how much energy and what energy may be saved by daylight saving, and whether legislation should be for this winter or for a 2-year period. We hope to report a bill out Tuesday or Wednesday. I understand the House has a bill before the Interstate and Foreign Commerce Committee, our counterpart over there. I think that hearings will start there no later than Tuesday. So, the two bills will coincide and run parallel. It is entirely possible that we could get a bill down to the White House for signature next week and we are hoping to do so. That is why we are going to proceed quickly with these hearings.

Now, Senator Stevenson, do you have a statement?

#### **OPENING STATEMENT BY SENATOR STEVENSON**

Senator STEVENSON. I have a statement which I would like to read.

Three weeks ago when I proposed year-round daylight saving time as the centerpiece for a nationwide energy conservation campaign, the Nation faced an energy shortage estimated at 3 to 5 percent.

Today those estimates for the winter months immediately ahead have increased to as much as 17 percent.

What was reasonable 3 weeks ago is now imperative.

The long cold winter is already upon us—and for the immediate future our best hope lies in energy conservation. Personal sacrifice is the price we must now pay for years of government and industry shortsightedness. The people must be moved to succeed because government and industry have failed.

Daylight saving time is a special kind of energy conservation measure. It will not solve all our problems. It will not save as much energy as other measures such as 50-mile-per-hour speed limits.

But daylight saving time, perhaps more than any other single conservation measure, can help rally the Nation to the difficult task ahead.

It is a simple procedure.

It requires positive Government action.

It can be enacted quickly.

It will save substantial amounts of energy.

It will affect every person in the Nation by involving them in an ongoing act of energy conservation.

It would involve little personal sacrifice.

It would add to the great majority's personal convenience and safety.

It would be a constant reminder of the present emergency and the need to adhere to other personal conservation initiatives.

It has widespread public support.

In today's hearings we will hear testimony on many of these points. But I would like to take special note of the last one.

Perhaps the most significant development over the last 3 weeks since S. 2602 was introduced has been the overwhelming public support expressed for year-round daylight saving time as the focal point for a national energy conservation campaign.

The shift to year-round daylight saving time has been proposed often in recent years. But this is the first time since World War II that it has been suggested primarily as a conservation measure and at a time of serious energy shortages. And it is the first time it has received such widespread public support.

Chicago Today took a poll of its readers and received over 7,000 responses, 10 to 1 in favor of year-round daylight saving time.

The St. Louis Globe Democrat took a poll and received over 11,000 responses, 7 to 1 in favor of year-round daylight saving time.

The Rockford Morning Star took a similar poll and received over 1,000 responses, almost 6 to 1 in favor.

Hundreds of radio, TV, and newspaper editorials across the nation have endorsed the concept.

And thousands of letters supporting it have flowed into Washington over the last 3 weeks—with a significant increase in volume this week. Mail in my own office is running 20 to 1 in favor of the proposal.

Various State leaders have expressed support and the legislature of the State of Massachusetts has passed a resolution urging the Congress to act immediately on year-round daylight saving time.

The fact is that people—those people who will be called upon to make the sacrifices that will get this Nation through the coming winter—are calling upon their elected officials to take this practical, as well as symbolic, first step toward a nationwide energy conservation ethic.

Much has been said about the energy crisis. But I believe the voices heard over the last several weeks indicate that people want the Government to do something about the energy crisis. People want answers—and they want action.

By scheduling these hearings on an emergency basis, Senator Magnuson responded to that call for action several weeks ago. I only regret that the administration did not respond sooner so as to spare us all the lost energy and the inconvenience that continues to result from the time change we made on October 28.

Now with administration support and hearings scheduled in the House for next Tuesday, I am hopeful that passage of this legislation will be realized by its new effective date of Sunday, December 2.

The experts tell us daylight saving time will save energy. The people tell us they are in favor of it. The time has come for both the Congress and the President to quickly make it a reality.

The stakes are simply too high and the need too great to ignore a measure as promising as year-round daylight saving time.

I want to extend special thanks to the Office of Energy Conservation, the Department of the Interior, the General Counsel's Office of the Department of Transportation and the Rand Corp. in Santa Monica, Calif., for helping provide the guidance and data that made this initiative and these hearings possible.

Mr. Chairman, as you mentioned, a number of bills have been introduced. Most of them provide for year-round daylight saving time. I introduced S. 2602 on October 23 and I want to commend you, Mr. Chairman, for scheduling these hearings very quickly on October 25.

S. 2602, unlike most of the other bills, is a temporary, emergency, 1-year daylight saving time bill that requires a study during that period to determine the effectiveness of daylight saving time as an energy-conservation measure.

As the chairman mentioned, daylight saving time was practiced during World War II. It is being practiced in The Netherlands right now as a conservation measure. It could reduce our total energy consumption in the United States by about 1 percent.

It could also reduce traffic fatalities, reduce crime and greatly increase the convenience of most citizens. It is hard to estimate, but perhaps most important of all it would be a simple, painless act by the Government which would remind every citizen of the United States, day in and day out, of the need to conserve energy.

I think the need for this bill, or a bill along the lines of S. 2602, is evident. It is evident to the public in Illinois. Chicago Today, one of the largest dailies in that city, polled its readers and received

over 7,000 responses. They were 10 to 1 in favor of daylight saving time. The St. Louis Globe-Democrat received a similar response. The Rockford Morning Star in Illinois, took a consumer poll and received 1,000 responses, 6 to 1 in favor. TV and Radio stations across the Nation have endorsed the concept. In my own office, the mail has been 20 to 1 in favor of this proposal.

I might add, Mr. Chairman, that the need is as clearly perceived in the rural areas as in the urban areas, at least in my own State. Rural residents are as threatened by the energy crisis as urban residents and support for year-round daylight saving time is broad-based.

It reaches into all communities.

Finally, I just want to extend some special thanks to the Office of Energy Conservation, Department of Interior, and General Counsel's Office of the Department of Transportation and also the Rand Corp. in Santa Monica, Calif. who helped provide guidance and data which made the initiating of these hearings possible.

Thank you, Mr. Chairman.

The CHAIRMAN. Senator Moss.

#### OPENING STATEMENT BY SENATOR MOSS

Senator Moss. Thank you, Mr. Chairman.

I look forward to the hearings and I certainly hope we can move swiftly with markup of a bill. I recall when we finally, on a national level, passed the daylight saving time bill which I partially supported at that time, but it was for summertime only, and it was based on a matter of convenience more than energy saving. Even so, I have often wondered why we change back during the winter months and twice a year go through the clock adjustment.

It seems to me now the potential for saving energy makes it imperative that we have year-round saving time. That is my feeling at this time, although I expect to listen to the witnesses and learn the positions of the various groups who will be represented before us. I think it is timely to have these hearings quickly, and I am sure that our committee will be anxious to move a bill out.

Thank you.

The CHAIRMAN. Thank you, Senator Moss.

[The bills and agency comments follow:]

93d CONGRESS  
1st Session

# S. 385

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## IN THE SENATE OF THE UNITED STATES

JANUARY 16, 1973

Mr. COOK (for himself and Mr. HUDDLESTON) introduced the following bill;  
which was read twice and referred to the Committee on Commerce

---

## A BILL

To amend the Uniform Time Act of 1966 to provide that  
daylight saving time be used from Memorial Day to Sep-  
tember 30.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*  
3       That section 3(a) of the Uniform Time Act of 1966 is  
4       amended by—

5               (1) striking out "the last Sunday of April" and  
6       inserting in lieu thereof "the last day before Memorial  
7       Day";

8               (2) striking out "the last Sunday of October" and  
9       inserting in lieu thereof "September 30"; and

10              (3) adding at the end thereof the following new  
11       sentence:

II

1 "For the purpose of this subsection Memorial Day shall be  
2 the public holiday designated under section 6103 (a) of title  
3 5, United States Code."

4 Amend the title so as to read: "A bill to amend the  
5 Uniform Time Act of 1966 to provide that daylight saving  
6 time be used from Memorial Day to September 30".

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93d CONGRESS  
1st Session

# S. 1260

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## IN THE SENATE OF THE UNITED STATES

MARCH 15, 1973

Mr. PEIL (for himself and Mr. PASTORE) introduced the following bill; which  
was read twice and referred to the Committee on Commerce

---

## A BILL

To provide that daylight saving time shall be observed on a  
year-round basis.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*  
3       That section 3 of the Uniform Time Act of 1966 (15  
4       U.S.C. 260a) is repealed.

5       SEC. 2. The Act of March 19, 1918 (15 U.S.C. 261-  
6       264), is amended—

7               (1) by striking out in the second sentence of the  
8       first section of such Act "Except as provided in sec-  
9       tion 3 (a) of the Uniform Time Act of 1966, the  
10      standard time of the first zone shall be based on the  
11      mean solar time" and inserting in lieu thereof "The

1       standard time of the first zone shall be based on the  
2       mean solar time (advanced one hour)"; and

3               (2) by adding after section 5 of such Act the  
4       following new section:

5       "SEC. 6. (a) It is hereby declared that it is the express  
6       intent of Congress by this Act to supersede any and all laws  
7       of the States or political subdivisions thereof insofar as they  
8       may now or hereafter provide for the observance of a time  
9       within any zone different from that specified in the first  
10      section for such zone.

11      "(b) For any violation of the provisions of the first  
12      section of this Act the Secretary of Transportation or his  
13      duly authorized agent may apply to the district court of the  
14      United States for the district in which such violation occurs  
15      for the enforcement of that section; and such court shall  
16      have jurisdiction to enforce obedience thereto by writ of  
17      injunction or by other process, mandatory or otherwise,  
18      restraining against further violations of that section and  
19      enjoining obedience thereto."

20      SEC. 3. The amendments made by this Act shall take  
21      effect at two o'clock antemeridian on January 6, 1974.

93d CONGRESS  
1st Session

# S. 2568

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## IN THE SENATE OF THE UNITED STATES

OCTOBER 11, 1973

Mr. McINTYRE introduced the following bill; which was read twice and referred to the Committee on Commerce

---

## A BILL

To extend daylight savings time during the period from the last Sunday in October 1973, through the last Sunday in April 1974.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*  
3       That it is the purpose of this Act to promote the conserva-  
4       tion of energy during the current shortage by providing for  
5       the continued use of daylight savings time during the period  
6       from the last Sunday in October 1973, through the last  
7       Sunday in April 1974.

8       SEC. 2. Section 3 of the Uniform Time Act of 1966 is  
9       amended by inserting at the end thereof the following:

II

1       “(d) Notwithstanding any other provision of law the one  
2 hour advance in time provided by subsection (a) of this sec-  
3 tion shall continue from 2 o'clock antemeridian on the last  
4 Sunday of October 1973, until 2 o'clock antemeridian on the  
5 last Sunday of April 1974.”.

93<sup>d</sup> CONGRESS  
1<sup>ST</sup> SESSION

# S. 2602

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## IN THE SENATE OF THE UNITED STATES

OCTOBER 23, 1973

Mr. STEVENSON introduced the following bill; which was read twice and referred to the Committee on Commerce

---

## A BILL

To provide that daylight saving time shall be observed on a  
year-round basis.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*  
3       That this Act may be cited as the "Emergency Daylight  
4       Savings Time Energy Conservation Act of 1973".

5       SEC. 2. The Congress hereby finds and declares—

6               (a) that the United States faces the probability of  
7       severe energy shortages, especially in the winter of  
8       1973-1974 and in the next several winters thereafter;

9               (b) that taking into account curtailments of all  
10      other fuels, the most optimistic estimates of this shortage

II

1 for the winter of 1973-1974 may be expressed as a short-  
2 fall of one hundred thousand barrels per day of numbered  
3 2 fuel oil;

4 (c) that various studies of the Department of Trans-  
5 portation and other governmental and nongovernmental  
6 agencies indicate that if daylight saving time were in  
7 effect year-round there would be an energy saving of  
8 from one-half to 3 per centum of all energy used in elec-  
9 trical power generation;

10 (d) that although no definitive studies have been  
11 done on the savings of energy in areas other than elec-  
12 trical power generation, there are indications that there  
13 would be savings in these other energy areas;

14 (e) that the studies referred to in clause (c) of  
15 this section indicate that if daylight saving time were  
16 extended to be in effect year round, such action by the  
17 Federal Government could serve as an incentive for  
18 other energy conservation by individuals, companies,  
19 and various governmental departments, agencies, and  
20 other entities at all levels of government, and that these  
21 energy conservation efforts could lead to greatly ex-  
22 panded energy savings and would help to meet the  
23 projected energy shortages, and that these energy con-  
24 servation efforts could include but not be limited to such  
25 actions as:

1           (1) turning down thermostats several degrees,  
2           especially at night:

3           (2) limiting unnecessary automobile travel and  
4           holding down the speed of necessary travel by  
5           automobile;

6           (3) keeping automobiles in tune and buying  
7           small, efficient automobiles;

8           (4) using public transportation whenever pos-  
9           sible;

10          (5) turning off office air-conditioners and heat-  
11          ing plants an hour earlier in the afternoon;

12          (6) making a conscious effort to limit unneces-  
13          sary use of lights; and

14          (7) shutting off all unnecessary office building  
15          lights and outdoor displays; and

16          (f) that in addition, the use of year-round daylight  
17          saving time could have beneficial effects in other areas  
18          affecting the public interest, including the reduction of  
19          crime, improved traffic safety, more outdoor playing  
20          time for the children and youth of our Nation, greater  
21          utilization of our parks and recreation areas, an expan-  
22          sion of tourism and travel, and the elimination of the  
23          confusion during the twice yearly changeover in times  
24          which occur in most areas of the Nation; and

25          (g) that the emergency nature of an energy short-

1       age in the winter of 1973-1974 requires at least the  
2       temporary enactment of year-round daylight saving  
3       time.

4       SEC. 3. Section 3 of the Uniform Time Act of 1966 is  
5       amended by inserting at the end thereof the following:

6       “(d) Notwithstanding any other provision of law (1)  
7       the one hour advance in time provided by subsection (a)  
8       of this section shall continue during the period from 2 o'clock  
9       antemeridian on the last Sunday of October, 1973, until 2  
10      o'clock antemeridian on the last Sunday of April, 1974, and  
11      (2) the provisions of clauses (1) and (2) of subsection (a)  
12      of this section shall not apply during such period.”.

13      SEC. 4. The Secretary of Transportation shall (1) make  
14      an investigation and study for the purpose of determining  
15      the amount of energy in its various forms which is conserved  
16      as a result of the extension of daylight saving time pursuant  
17      to the amendment made by this Act, and (2) report the  
18      results of such investigation and study, together with his  
19      recommendations to the President and the Congress not later  
20      than June 30, 1974.

DEPARTMENT OF STATE,  
Washington, D.C., March 8, 1973.

HON. WARREN G. MAGNUSON,  
Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.C.

DEAR MR. CHAIRMAN: Thank you for your letter of February 22, 1973, enclosing for the Department's comments a copy of S. 385, to amend the Uniform Time Act of 1966 to provide that daylight saving time be used from Memorial Day to September 30.

The United States has executed treaties with Canada (1967) and Mexico (1968) concerning the operation of certain standard broadcasting stations during a limited period prior to sunrise. While the proposed legislation would affect the hours during which these stations could operate, the Department does not consider that the United States Government's treaty obligations would be affected, thereby necessitating renegotiation of the treaties. Under the terms of the agreement with Mexico, the United States is only obliged to advise the Mexican Government of the dates when standard time is converted to daylight saving time, and when the United States returns to standard time. No comparable provision appears in the agreement with Canada.

While the Department has no objection to this legislation from the standpoint of foreign policy interests, it would defer on the merits of the bill to the Department of Transportation which has primary responsibility for this matter. It is noted, however, the loss in operating time that would result from the implementation of this legislation would probably be of concern to the broadcasting stations and therefore also to the Federal Communications Commission.

The Office of Management and Budget advises that from the standpoint of the Administration's program there is no objection to the submission of this report.

Sincerely yours,

MARSHALL WRIGHT,  
Acting Assistant Secretary for Congressional Relations.

OFFICE OF THE SECRETARY OF TRANSPORTATION  
Washington, D.C., March 20, 1973.

HON. WARREN G. MAGNUSON,  
Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.C.

DEAR MR. CHAIRMAN: This is in reply to your request for the views of the Department of Transportation regarding S. 385 which would amend the Uniform Time Act by changing the period of advanced time from six to four months. It would change the annual advanced time changeover dates from the "last Sunday in April" and the "last Sunday in October" to "the last day before Memorial Day" and "September 30", respectively.

As you know, all the functions, powers, and duties of the Interstate Commerce Commission under the Uniform Time Act (80 Stat. 107; 15 U.S.C. 260) were transferred to the Department of Transportation on April 1, 1967.

Section 2 of the Uniform Time Act directs the Department to foster and promote the adoption and observance of the same standard of time within and throughout each standard time zone. Section 3(a) provides for the uniform one hour advance in time in each time zone from the last Sunday in April to the last Sunday in October unless a State exempts itself by law from the advanced time provision.

The legislative history of the Act discloses that the six-month period of advanced time was selected because more than ninety percent of those who already observed daylight time used the period from the last Sunday in April to the last Sunday in October.<sup>1</sup>

The six-month advanced time period specified in the Uniform Time Act of

<sup>1</sup>Hearing before the Committee on Interstate and Foreign Commerce, House of Representatives, 89th Congress, 2nd Session, February 2, 1966, p. 40.

1966 has been applicable on a national basis for six years—the summers of 1967 to 1972, inclusive. During that time, the overwhelming majority of the States have observed advanced time from the last Sunday in April to the last Sunday in October in accordance with the provisions of the Uniform Time Act.

To amend the Act by restricting the specified period now in effect would entail a complete re-evaluation of the question by each of these States. The resulting uncertainty would have, in our opinion, a debilitating effect upon the great majority of people who have already adapted their social and business affairs to the six-month period of advanced time. Moreover, administrative burdens would be placed upon common carriers, broadcasters, other similar industries which are governed by a strict adherence to time, and the governmental agencies which regulate them.

The Department feels that a shortening of the advanced time period would be contrary to the evidence showing a preference for the six-month period.

Accordingly, the Department does not favor enactment of S. 885.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the submission of this report for the consideration of the Committee.

Sincerely,

JOHN W. BARNUM.

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DEPARTMENT OF THE NAVY,  
OFFICE OF LEGISLATIVE AFFAIRS,  
Washington, D.C., April 3, 1973.

HON. WARREN G. MAGNUSON,  
Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.C.

DEAR MR. CHAIRMAN: Your request for comment on S. 885, a bill "To amend the Uniform Time Act of 1966 to provide that daylight saving time be used from Memorial Day to September 30," has been assigned to this Department by the Secretary of Defense for the preparation of a report thereon expressing the views of the Department of Defense.

While the Superintendent, U.S. Naval Observatory, has been assigned Department of Defense single management responsibility for time and time interval matters, the facet of time for which the Naval Observatory has responsibility is not affected by any shift from daylight saving time to standard time or vice versa. The question of standard time versus daylight saving time is not a scientific one, but rather a question to be decided on the basis of the greatest convenience to the majority of people.

The Department of the Navy on behalf of the Department of Defense defers to the views of other executive departments and agencies with respect to the merits of S. 885.

This report has been coordinated within the Department of Defense in accordance with procedures prescribed by the Secretary of Defense.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the presentation of this report on S. 885 for the consideration of the Committee.

For the Secretary of the Navy.

Sincerely yours,

E. K. SNYDER,  
Rear Admiral, USN, Chief of Legislative Affairs.

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DEPARTMENT OF THE INTERIOR,  
OFFICE OF THE SECRETARY,  
Washington, D.C., November 8, 1973.

HON. WARREN G. MAGNUSON,  
Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.C.

DEAR MR. CHAIRMAN: This modifies our previous report on S. 885, a bill "To amend the Uniform Time Act of 1966 to provide that daylight saving time be

used from Memorial Day to September 30' and contains our views on similar bills S. 1260, S. 2568 and S. 2602.

We recommend that S. 1260 be enacted and not the other bills.

S. 885 would reduce the period during which daylight saving time observed by two months. The other bills would establish daylight saving on a year-round basis. S. 2602 would do so for a trial period of one year.

In his message to the Nation on Energy on November 7, 1978, President Nixon proposed immediate return to daylight saving time. The principal benefit of extending daylight saving is a potential saving of fuel. Estimates of the potential saving vary. Nevertheless, at a time when the Nation faces severe energy shortages any effort to conserve energy is important, particularly one which is as relatively painless as this one.

Proponents of this legislation also claim that it could help to reduce crime and traffic accidents. While we are not in a position to corroborate these claims, we cannot imagine any serious drawbacks to the legislation and in view of the wide range of possible benefits, urge its enactment.

We prefer the more direct approach of S. 1260 which changes the standard time in each zone by advancing it one hour rather than the indirect approach of amending the Act so that it provides in one place standard times for each zone and in a separate section advances the time for a part of the year and in still a third section advances it for the rest of the year. This is the type of convoluted drafting that frequently makes statutes so difficult to understand.

We would amend section 3 to make the Act effective at 2:00 a.m. on the second Sunday following enactment.

The Office of Management and Budget has advised that there is no objection to the presentation of this report from the standpoint of the Administration's program.

Sincerely yours,

JOHN KYL,  
*Assistant Secretary of the Interior.*

CIVIL AERONAUTICS BOARD,  
*Washington, D.O., November 16, 1978.*

HON. WARREN G. MAGNUSON,  
*Chairman, Committee on Commerce,  
U.S. Senate,  
Washington, D.O.*

DEAR MR. CHAIRMAN: This is in reply to your requests for the Board's views on S. 885 and S. 1260, bills amending the Uniform Time Act of 1966 in certain respects.

Section 3 of the Uniform Time Act (15 U.S.C. 260a) requires each State to observe daylight saving time between the last Sunday of April and the last Sunday of October. However, a State lying entirely within one time zone may by law, exempt the entire State from daylight saving time, and a State with parts in more than one time zone may exempt either the entire State or the entire area of the State lying within a given time zone.

S. 1260 would repeal section 3 of the Act and amend the Standard Time Act (15 U.S.C. 261-264) so as to require each State, commencing January 6, 1974, to observe daylight saving time on a year-round basis. No options would be provided to the States in the adoption of daylight saving time. According to its sponsor, one of the objectives of the bill is to conserve energy used in electrical power generation.

The Board is in accord with this objective. In his November 7 address, the President indicated that extension of daylight saving time year-round was one step in a series of steps to achieve the goal of conserving energy. The Board defers to the views of the Executive Branch expressed through the Secretary of Transportation as to whether this particular bill is the most appropriate measure for accomplishing this objective since the Secretary has the responsibility for the administration of the Uniform Time Act.

With respect to S. 885, the Uniform Time Act would be amended so as to provide that daylight saving time would be used from Memorial Day to September 30 rather than from the last Sunday in April, to the last Sunday in October. According to its sponsor, the purpose of the bill is to reduce the hardships to school children and farmers resulting from the use of daylight saving time during the months of May and October.

The Board is primarily concerned with the fact that any dates for the commencement and termination of daylight saving time on a nationwide basis be uniform, rather than with the length of the period for the observance of daylight saving time. However, the Board defers to the views of the Secretary of Transportation as to the desirability of S. 385.

The Board has been advised by the Office of Management and Budget that there is no objection to the submission of this report from the standpoint of the Administration's program.

Sincerely,

WHITNEY GILLILLAND, *Acting Chairman.*

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INTERSTATE COMMERCE COMMISSION,  
Washington, D.C. November 13, 1973.

HON. WARREN G. MAGNUSON,  
*Chairman,*  
*Committee on Commerce,*  
*U.S. Senate,*  
*Washington, D.C.*

DEAR CHAIRMAN MAGNUSON: By your letter of November 5, 1973, you have requested any comments I might care to offer concerning S. 2568. This bill would amend the Uniform Time Act of 1966, 80 Stat. 107, so as to provide for the continuance of daylight savings time from the last Sunday in October 1973 through the last Sunday in April 1974.

All functions, powers and duties of this Commission under the Uniform Time Act were transferred to and vested in the Secretary of Transportation in 1966 by Public Law 89-670, 80 Stat. 937. However, it is my view, from past experience when the Commission was involved in this area, that the transportation industry should have no significant problems in adjusting to the proposed change.

It should be noted that the present language of the bill would produce a retroactive effect from the last Sunday in October of 1973 until the date it becomes law. Transportation companies always find it necessary to make schedule changes due to the shift from standard time to daylight savings time, or vice versa. There also could be possible adverse consequences in the area of computation of demurrage and detention charges. Thus, I suggest that a small amount of lead time be provided, and that the proposed modification of the Uniform Time Act be made effective as of 2 a.m. on the second Sunday following the date of enactment.

Thank you for the opportunity to comment on this legislation.

Sincerely yours,

(Signed) GEORGE M. STAFFORD,  
*Chairman.*

The CHAIRMAN. Our first witness is Congressman Van Deerlin.

#### STATEMENT OF HON. LIONEL VAN DEERLIN, U.S. REPRESENTATIVE FROM THE 42D DISTRICT OF CALIFORNIA

Mr. VAN DEERLIN. Thank you, Mr. Chairman. I usually don't have much trouble in getting unanimous consent to refrain from reading the statement that I have provided to the clerk, and I trust I can get such consent here.

The CHAIRMAN. We will put your statement in the record in full.

Mr. VAN DEERLIN. I must agree with Senator Stevenson on the output of support for this legislation, which, as you noted, will be moving through our House committee beginning on Tuesday, with a markup session scheduled for Thursday. I would surely share your hope that we can move this as what it was intended to be, an emergency measure.

The widespread support for this legislation is based, of course, on the urgency of the moment. Its support has been made clear, since I introduced legislation on this last May, in the range of mail and resolutions that have come into my office, not entirely from my district.

As a matter of fact, I think perhaps the lone exception to this expression of support comes from my mother, who did a lot of cow milking in her early years, and considers daylight saving an abomination. She regards my sponsorship of this bill as the most questionable action I have taken during 11 years in Washington.

Fortunately, she does not vote in my district.

The CHAIRMAN. The first bill in the Senate was just for the summer. There were several Senators that had signs on their doors, "This office runs on God's time."

Mr. VAN DEERLIN. I do hope we will not find the Almighty and my mother arrayed on one side against the rest of us.

The CHAIRMAN. We don't want to get into trouble with either one, do we?

Mr. VAN DEERLIN. The side benefits from D.S.T. have been noted repeatedly here, having nothing to do with the energy crisis. My statement will include a compendium of statistics from the San Diego Police Department showing the increase in accidents as soon as we move into the loss of the hour's daylight every autumn.

The statistics, of course, are not completely scientific. There are other factors, such as less desirable winter weather, even in southern California, that might contribute to the accident rate. But I think it is important to find out whether daylight isn't as closely associated with traffic safety as it is with the crime rate.

There is no question at all that an hour's additional daylight is going to help in many of our urban areas in the direction of safer streets.

It is possible, with this change, that we might even make Washington safe for Senator Proxmire.

These bills, as you know, have been falling like hailstones since we got into the depth of the energy crisis.

The legislation that Senator Stevenson introduced on your side, and that I introduced last spring on our side, differs from the others only in the manner in which they would establish a testing period.

I think perhaps it is important, before we lock this up forever—because there are still some parts of the country that have difficulty with daylight saving—important to get the facts on the basis of performance.

It is possible, under Senator Stevenson's bill, to require reports after a single year's testing. My bill calls for a 2-year period, after which the Department of Transportation would be able to assemble all the facts and find out whether DST was doing the job that was intended for it.

The CHAIRMAN. It might be well for the record to note that there are several bills in the House.

Mr. VAN DEERLIN. Yes, one major bill and the chairman's bill.

The CHAIRMAN. Does your bill provide for a 2-year period?

Mr. VAN DEERLIN. Yes, Mr. Chairman.

The CHAIRMAN. The bills we have provided—well, one is perma-

nent, and makes it mandatory. Another is for 2 years and then, Senator Stevenson, yours is for 1 year. So we have a variation.

I don't know what the administration is going to suggest, but I think they are going to suggest that the time period be permissive with the Executive. So we have all of these different possibilities involved.

Mr. VAN DEERLIN. I think, Mr. Chairman, whether it should be 1 year or 2 years or possibly even 3 years is to quibble. What we want to do is find a period, if we decide not to bite the bullet all the way, to find a period for testing it.

The CHAIRMAN. Another question is whether we should preempt the States all together or allow them a flexibility of getting in and out.

Mr. VAN DEERLIN. Which the present law still does.

The CHAIRMAN. Yes.

Mr. VAN DEERLIN. I think this is desirable. In England, they had some problems where Ireland and Scotland were concerned, and parts of the country have always been concerned whether they should be in this time zone or that time zone, and whether they wanted to go along with DST or not.

The CHAIRMAN. We have struggled with that in this committee for years. It is a problem to resolve just how to work out a time zone. Time zones seriously affect all modes of transportation.

Mr. VAN DEERLIN. That is why the responsibility lies with the DOT, Mr. Chairman.

The CHAIRMAN. Go ahead.

Mr. VAN DEERLIN. That just about winds me up. I don't want to weigh too heavily on the committee. I just want to emphasize my feeling that we should get all the facts on this, as it is possible to do with a sufficiently long test period, and then it will be a simple enough matter by resolution to continue it or to make it permanent. Regardless of what the administration bill provides, I think that on the Hill we are quite capable of making this judgment. I hope that we will proceed without awaiting final word from the other end of the Avenue.

The CHAIRMAN. What would you think of some kind of a trial period, then if there is no affirmative action, it becomes permanent?

Mr. VAN DEERLIN. It sounds good to me.

The CHAIRMAN. I mean affirmative action to repeal it.

Mr. VAN DEERLIN. Then you avoid all the fuss and bother.

The CHAIRMAN. Yes. Either it is going to be a success and people are going to get used to it and say "Let's continue" or there will be so many problems that there will be a move to discontinue it.

As you say, we won't lock it up, or shut them out.

Mr. VAN DEERLIN. But make it easier to keep than to dispense with.

The CHAIRMAN. That was our intention.

I think that—

Mr. VAN DEERLIN. I think that is the wisdom of Solomon.

Senator Moss. Do you favor permitting States to opt in and out?

Mr. VAN DEERLIN. Under the present law, this requires positive action by the State legislature. I think to the extent possible, if

people feel strongly in an area and it isn't upsetting the rest of the Nation, I think we should extend the right to decide these things for themselves.

Senator MOSS. Wouldn't it be better to redraw the time zones if States felt that strongly about it? The thing that concerns me is transportation scheduling.

You don't know whether Arizona is on standard time or daylight time.

Mr. VAN DEERLIN. I believe there are two States at present, I believe. Well, it hasn't been too disruptive I gather, and your solution would surely be an excellent one to artificially re-draw the time zone barrier.

All of Western Europe is on one time zone, so that the sun comes up at 7:30 in Spain, and about 6 o'clock in East Berlin.

Senator MOSS. I have noticed that in Europe. I think that adds a uniformity which makes it very simple and convenient to the commerce and travel in that area. Arizona happens to be straight south of Utah, and part of the time we are on the same time as Arizona, and part of the time we are not. It is rather confusing.

I wonder if maybe we ought to draw the time zone differently if Arizona wants to opt out.

Mr. VAN DEERLIN. I think that would be simple enough to do. It would cause some problems laterally, I suppose—but you might as well confuse them laterally as longitudinally.

Senator STEVENSON. Mr. Chairman, I want to compliment Congressman Van Deerlin for his foresight. His bill was introduced in May to provide for daylight saving time, and a 2-year study. I agree with the Congressman when he says we are quibbling on whether it is 1 year, 2 years or 3 years.

I think we can, in this hearing, obtain testimony from experts as to just how long a time it would take for that study.

There is another difference which was alluded to by Senator MOSS.

In addition to the scheduling difficulties that are encountered when one area is on one time and another is on another time, the energy shortage is a national shortage, and it seems to me that in a national shortage the Nation should uniformly adopt this.

Mr. VAN DEERLIN. Well, don't you think, Senator, with the head of steam that is built up behind this now, and the understanding that many people have, and the one-sided polls—don't you think that the opting out is most unlikely?

Senator STEVENSON. It is most unlikely in Illinois. I don't know about Indiana or maybe some States in the Southwest. I just don't know.

Mr. VAN DEERLIN. I find it difficult to believe that the entire country would not go along with this now. I do like to think that they are doing it because it is the right thing to do, rather than because they are being compelled to do it.

Senator STEVENSON. I hope we can safely make that conclusion. We will know soon enough.

Mr. VAN DEERLIN. This is a nation, and not a lot of Balkan States.

The CHAIRMAN. Congressman, before you leave, we have another

problem that I am sure you are aware of. Everybody talks about having a cold winter and all that. We hope that we don't have a cold winter, but we have had an awfully dry year up in the Pacific Northwest, and the power that we send down to California in the summertime on the interchange is going to be very, very short. So we are talking about the problem of air-conditioning consumption in California.

Mr. VAN DEERLIN. You will understand that southern California finds it difficult to share your concern for the lack of water in the Pacific Northwest, although I recognize—

The CHAIRMAN. I didn't mean water. I am talking about electricity.

Mr. VAN DEERLIN. I know that has been a serious problem, of course.

The CHAIRMAN. That is something we have to look at in Washington State, because in return, you send us up electric energy for heat when we need it.

Thank you very much.

Mr. VAN DEERLIN. Thank you.

[The statement follows:]

STATEMENT OF HON. LIONEL VAN DEERLIN, U.S. REPRESENTATIVE FROM CALIFORNIA

It is an honor and a privilege to appear before you today in support of legislation providing for year-round Daylight Saving Time—an idea whose "time" has clearly come. I can tell you that on our side of the Capitol the House Commerce Committee will start similar hearings next Tuesday. And of course we now apparently have the full support of the White House, in pushing for full-time DST.

There are few matters of more urgent concern than the current fuel shortage. Scarcely a day passes without another warning of incipient crisis. The bills before you would provide immediate relief at minimal cost. Let's get one of them through quickly, even before the Winter Solstice barely a month from now.

Besides helping to conserve energy, year-round DST also should help reduce street crime and traffic accidents, as has been widely mentioned.

My home city of San Diego is a case in point. A city survey for the year 1969 showed that the pedestrian accident rate increased by 32 per cent in Standard Time months. The number of such accidents was 221 during 183 days of Daylight Saving Time and over the 292 days when Standard Time was in effect. Even allowing for the fact the days are longer, making traffic conditions inherently safer during the DST period of Spring, Summer and early Fall, it stands to reason that the relatively heavy wintertime toll could be cut if we could add another hour of daylight at the end of the day.

But the main focus of our efforts should be on conserving energy. Thanks to the recent study by Rand Corporation, we have a much clearer idea today of the very impressive potential in this regard of year-round daylight saving.

Rand has estimated that savings from year-round DST would amount to as much as 1.5 per cent of total energy needs this winter, brought about as a result of pushing back nightfall by a full 60 minutes.

I believe any of the bills for implementing year-round Daylight Saving Time are worthy of support by this Committee and the Congress.

Senator Stevenson's bill, S 2602, calls for testing year-round DST on an emergency basis for one full year. S 2602 would put the country back on daylight time as soon as it were enacted, hopefully before the onset of winter when fuel needs will be most acute.

On May 1, I introduced HR 7893, which like Senator Stevenson's proposal would establish a trial for all-year DST. My bill differs in that it would provide for a two-year testing period, with an evaluation by the Department of

Transportation to be completed within that span. On reflection, it is probably unrealistic to expect a study of such magnitude to be completed by DOT and acted on by Congress within the two-year time frame, which also would have to cover the actual test of all-year DST. A three-year authorization might be more appropriate, if we decide to package in a single bill the entire process for examining and perhaps making permanent year-round DST.

But this is quibbling over details. The basic approach outlined in both bills—Senator Stevenson's and my own—is the same, and I would be delighted if either passed, or anything approximating these measures.

I do believe we should give ourselves the opportunity to carefully examine the year-round DST system before locking it in as the law of the land. We need to know whether it will indeed live up to the promise outlined by the Rand Corporation, and this we do only through extensive testing.

On the surface, year-round DST would seem a distinct convenience for most people. During the season of standard time, once again upon us, most of us following a normal schedule start each day with a largely wasted hour of daylight. And at the end of the day, whether in our homes or at the office, we turn on the lights 60 minutes earlier than otherwise might be necessary.

It would seem that at the very least, DST during wintertime would relieve some of the pressure on generating capacity, particularly in our urban areas. I am advised that yearly peaks of demand for electric power are reached with the falling of darkness in early December. Generators hum to produce the power then needed to light and heat homes and offices. Perhaps if we could "postpone" the setting of the sun for 60 minutes, by keeping DST in effect all year round, most people could get home before dark on even the shortest days of the year, and the pressure on our generating capacity would be significantly alleviated.

Year-round DST has been tried before, of course, and proven successful. The wonder is that we ever reverted to our present on-again, off-again procedures.

From February, 1942, to October, 1945, DST was in effect on a year-round basis throughout the United States. The purpose of this wartime measure was to conserve electricity—and it worked.

More recently, for a three-year period ending in 1971, Britain conducted a similar test. Studies indicated a dramatic leveling off of peak period demands for electricity, with a concurrent 3.8 per cent drop in traffic accidents, but following the trial Parliament did in fact terminate the year-round daylight saving experiment. Primarily responsible for the decision to discontinue the system was the discontent of the states to the north and west of England proper—they were genuinely inconvenienced. Because of their location in relation to England, the sun simply did not appear until too late in the day for them.

It is possible that some agricultural states in our own country might be similarly inconvenienced by year-round DST. And generally speaking, these states would be those—predominantly rural in nature—where the energy crisis is least acute. My bill—and I assume S 2602 as well—would amend the Uniform Time Act of 1966, which already provides exemptions for states which determine that compliance would be burdensome. Individual states would still have their freedom of choice, so presumably we should be spared the problems which have prevented full adoption of the DST concept by Britain.

In any event, it is incumbent on us to act, and the sooner the better. We can no longer afford the luxury of procrastination.

The CHAIRMAN. We have some statements for the record from Senator Pell and Congressman Hosmer which we will put in the record at this time.

[The statements follow:]

STATEMENT OF HON. CLAIBORNE PELL, U.S. SENATOR FROM RHODE ISLAND

Mr. Chairman: Early in this Congress, on March 15, I introduced, with my distinguished senior colleague, Senator Pastore, a bill (S. 1260) providing for year-round nationwide observation of daylight saving time.

We were, at that time, the only proponents in the Senate of such a measure. Since that time, quite obviously, interest in the proposal and support for it

have grown tremendously, primarily because of the potential energy savings involved.

Additional bills have been introduced in the Senate and in the House of Representatives. At the state government level, the New England governors will consider the matter at their meeting next week. In my own State of Rhode Island, the island town of New Shoreham, in a spirit of independence, took matters into its own hands this week and by vote of its town council will return to Daylight Saving Time this weekend.

Most significantly, of course, the President this week has asked the Congress, as part of his Emergency Energy Legislation, to provide for year-round observation of daylight saving.

The Administration estimates that returning promptly to daylight saving time will reduce electricity and heating demands by as much as three percent, particularly in Northern areas of the country. I would add that it is precisely the Northern areas of the country that have the heaviest demand for energy for heating purposes, and it is in the same areas that both the potential and the need to conserve energy is the greatest.

Mr. Chairman, when I introduced this legislation nearly eight months ago, the case for year-round daylight saving time was persuasive. Because of the emergency energy shortage, I believe the arguments now are compelling for enactment of this legislation.

Of all the energy conservation measures ordered and proposed by the President in his message to the nation, the return to daylight saving is the only action that will produce significant energy savings without any expenditure of funds, and without imposing any inconvenience on the public. In fact, I believe the great majority of Americans will view a return to daylight saving time as a convenience and an improvement in itself, even without energy savings.

Obviously, the promise of energy savings is the most compelling argument for this legislation. However, there are other important benefits of observing daylight saving during the winter months and they should not be overlooked.

According to the National Safety Council, for example, the rate and severity of traffic accidents is the highest just after sundown. Hence, when we returned to standard time a few weeks ago, commuters were forced to return home during the hours of greatest hazard. An additional hour of daylight would make it possible, during most of the winter months, for commuters to reach their homes before the onset of darkness, without requiring them to travel to work in darkness during the morning.

Another benefit would be a reduction in street crime. Statistics indicate that robbery, muggings and purse snatching are most frequent during the early evening. With the extra hour of daylight saving time at a time when most of the work force is enroute home, criminals would be less apt to threaten individuals returning to their families.

When all of these factors are considered, I believe the case for a prompt return to daylight saving time is compelling, and I urge early and favorable consideration of this legislation.

I want to thank you, Mr. Chairman, and members of the committee for this opportunity to submit this testimony to the committee.

I would be remiss if I did not also commend the Commerce Committee as a whole for its sustained leadership through the years in providing a uniform time system for our country. Few people realize how nettlesome and complicated the establishment of uniform time policies can be, and how difficult it is to achieve national agreement on them. This Committee, through the years, has made a major contribution in helping to resolve these difficult questions of time standards, and I congratulate the Committee on its record of accomplishment.

#### STATEMENT OF HON. CRAIG HOSMER, U.S. REPRESENTATIVE FROM CALIFORNIA

Mr. Chairman: I am pleased to testify in support of year-round Daylight Saving Time.

For a number of years I have introduced legislation to this end in the belief that someday my fellow legislators would see the light and act on this proposal, which I call "Enlightened Time."

Most western Europe nations recognized the values of year-round Daylight Saving Time years ago. In fact, someone forgot to tell the Russians in the fall

of 1880 to set their clocks back an hour, and for 88 years they were on Daylight Saving Time without even realizing it.

How did we get our present system of time in the United States? Less than a century ago, most communities selected their own time. But with the expanding arm of the railroad, time discrepancies became a serious problem. For their own purpose, the railroads divided the U.S. into four time zones, and in 1884 an International Meridian Conference met in Washington, D.C. to divide the world into 24 time belts, thus creating a system of world standard time. Year-round Daylight Time was first introduced in the United States during World War I when Congress enacted the Daylight Saving Act in order to conserve fuel and energy.

Obviously, there are only so many hours of daylight in any given day, and there is nothing that the Congress or anyone else can do to increase the number of daylight hours.

What we must do now is adjust our time standards so that we can make the best use of the limited daylight provided by nature. We have recognized the clear advantages of doing so during the summer months when nature is already generous with daylight. It is entirely reasonable to do the same during the winter months when the daylight hours of each day are limited and even more precious.

I think it is clear that even during the short winter days an hour of daylight is more advantageous at the end of the day than in the early morning hours.

Consider the benefits of year-round Daylight Saving Time:

1. *Energy Saving.*—Of primary current concern to our nation is the energy crisis. Studies have demonstrated that this year our energy deficit would be halved by converting immediately to year-round Daylight Saving Time. In addition to the enormous amount of fuel conserved, the American public would save almost \$600 million on its electric bills alone.

2. *Crime Reduction.*—Year-round Daylight Saving Time would cut down on crime by permitting most people to get home from work before dark. Crime statistics clearly show that the incidence of street robberies and muggings increase significantly as night falls. In contrast, they are essentially nil in the early morning hours.

3. *Commercial Convenience.*—There has been some discussion that store hours may be curtailed because of the energy crisis. People do not shop between 6 and 9 in the morning, but in the evening. Year-round Daylight Saving Time would at once reduce the amount of power consumed during prime shopping times in the evening. It would also make after work shopping more attractive because of the added hour of daylight. With permanent Daylight Saving Time all businesses that close at 5:30 would always close in daylight, even on the shortest day of the year.

4. *Traffic Safety.*—Most accidents now occur during the evening rush hour, when visibility is poor and drivers are weary after a day's work. A three-year experiment with year-round Daylight Saving Time in Great Britain proved that the additional daylight resulted in a 3.8% reduction in traffic fatalities and serious accidents.

5. *Anti-Dépressant.*—Studies have shown that some psychological neuroses are associated with the dark winter months. Rather than exacerbate this with Standard Time, we should provide more daylight later in the day. This would allow more recreation time after work and school to combat the "winter blues."

6. *Mickey Mouse Factor.*—Year-round Daylight Saving Time would end the confusion of having to turn the nation's clocks backward and forward. Perhaps one of the best parts of the bill is that it would abolish once and for all the trivia, "Spring forward, Fall backward."

7. *No Disadvantages.*—There has been reluctance by some groups to accept year-round Daylight Saving Time. However, their voiced disadvantages are perceptive, not real. For example, a farmer who gets up with the dawn whether it is called 6 or 7 a.m. still has the same amount of working hours. In rural areas an additional factor would be that the standardization of a year-round time would make the scheduling of agricultural work easier since workers would not have to change their routine one hour each spring and fall.

8. *It's Democratic.*—Year-round Daylight Saving Time gives more light to more people more of the time. Can you imagine anyone really voting for darkness?

So let's not wait until April to turn our clocks forward. Every ray of sunlight lost is irretrievable.

Remember, it was the wise man Benjamin Franklin who is reputed to have invented Daylight Saving Time because precious sunlight should not be allowed to waste while one is sleeping.

I urge your favorable consideration of a measure to legislate year-round Daylight Saving Time.

The CHAIRMAN. The next witness is Dr. John Gibbons, and Mr. Halpern. Dr. Halpern is from the Secretary of Transportation and Dr. Gibbons is from the Office of Energy Conservation, Department of the Interior. We will be glad to hear from you at this time.

**STATEMENT OF DR. IRWIN P. HALPERN, DEPUTY ASSISTANT SECRETARY OF TRANSPORTATION, OFFICE OF THE ASSISTANT SECRETARY FOR POLICY, PLANS, AND INTERNATIONAL AFFAIRS; ACCOMPANIED BY STEPHEN L. GROSSMAN, ASSISTANT GENERAL COUNSEL FOR REGULATION, OFFICE OF THE SECRETARY; AND DR. JOHN GIBBONS, DIRECTOR, ENERGY CONSERVATION, DEPARTMENT OF THE INTERIOR**

Dr. GIBBONS. Mr. Chairman, and distinguished members of the committee, thank you for inviting me here this morning. I serve as Director of the Office of Energy Conservation in the Department of the Interior.

I would like to read from my statement this morning, if you do not mind, and I would like to include the one attachment.

The CHAIRMAN. You conducted a study, is that correct?

Dr. GIBBONS. Yes, sir, that is an attachment.

The CHAIRMAN. We will put that in the record in full and then you can go ahead with your statement.

Dr. GIBBONS. You also have a statement from me that should be attached to that.

The CHAIRMAN. All right.

We have all of these bills which are pretty well directed to the same objective. You are directing yourself to the energy part of this whole proposition, is that correct?

Dr. GIBBONS. Yes, I believe Secretary Morton has addressed, in a letter to the committee, his feelings about the specific bills.

As you know energy research has traditionally dwelled on increasing supplies rather than finding ways to use energy more efficiently. Nevertheless, there are a host of possibilities for saving energy with little attendant inconvenience or loss of affluence. There are no big ticket options; almost all have an impact savings in the range of less than 1 percent of national energy consumption. This is especially true of options that can be put into use within a few years. But the sum of impacts from a variety of options can make a big difference, as large as 30 percent within 15 years. Such a savings would make an important contribution in achieving energy self-sufficiency.

Some options are easy to evaluate quantitatively. For example, slowing down the cruising speed of commercial aircraft can be done with relative ease—little inconvenience and very specific savings of jet fuel. Other options are much more difficult to quantify, especially

those which depend on individual human responses. Such is the case for winter daylight saving time—w.d.s.t. The night before last, President Nixon addressed the Nation on the energy situation, and proposed a number of measures to reduce consumption. One of these was a change to daylight savings time on a year-round basis.

We support this move as a potential source of important fuel savings resulting from the following:

1. Direct changes can occur in amount of electricity consumption caused by the w.d.s.t. shift, because the amount of added lighting in the morning could be different from the amount of decreased lighting in the evening.

2. Changes in fuel used to generate electricity could occur even if there were no net changes in the amount of electricity used. This is because the net efficiency of electrical systems are different at different load levels—greater efficiency at lower level loads. The morning peak load is generally lower than the evening peak load so even a simple shift from evening to morning could cause a savings in fuel, even though the same number of kilowatt hours were generated.

While we tend to think of the impact of w.d.s.t. mostly in terms of changes in electrical lighting requirements, other things can also happen. For example:

3. Space heating loads of buildings can shift because with w.d.s.t. people get up with respect to the sun—earlier before the sun has begun to moderate the temperature—but they also go to bed before the outside temperature has fallen very far.

The CHAIRMAN. That is based on the fact that the coldest part of the day occurs in the morning hours, in which any daylight savings does not have very much affect.

Dr. GIBBONS. Hopefully, we sleep through it.

The CHAIRMAN. Those that do not can use flashlights.

Dr. GIBBONS. That takes energy.

The CHAIRMAN. People forget that the low temperature occurs about 4 or 4:30 in the morning.

Dr. GIBBONS. Yes, sir.

4. Accident rates would tend to increase in darker early morning hours but decrease in evening hours. Crime rates could likewise be affected.

Therefore, when we consider w.d.s.t. as an energy conserving measure the kind of research information and analysis required is complex.

The Office of Energy Conservation has not made a detailed analysis of w.d.s.t. However, the OEC has collected and evaluated existing information. It has also reviewed evidence of public opinion about w.d.s.t. Despite some uncertainties, the conclusion of the Office is that the chances for net U.S. energy savings from w.d.s.t. are high. Actions instituted yesterday by the President and others being considered by the Congress will tend to insure that w.d.s.t. will cause net savings.

How much energy savings? Estimates of combined direct and indirect electricity savings vary from negligible to about 4 percent of total electricity demand. Most estimates range from a few tenths percent to 1 percent. Three tenths of 1 percent in national electrical

generation—which provides about 8 percent of total national energy use—is equivalent to the energy used by a large modern steam powerplant, 1,000 MWe, burning nearly 10,000 tons of coal per day.

The impact of w.d.s.t. on heating requirements is a very hard thing to estimate because it strongly depends upon what one assumes about American individual habits. Estimates vary from slight gains to slight losses—both much less than 1 percent in energy.

Consumer awareness probably will make a major difference in this effect. In the commercial sector which tends to open late and close late, net heating and lighting energy savings would be expected since under w.d.s.t. the store hours would more nearly coincide with sun hours. The situation in the industrial sector is more difficult to anticipate because of the variability from one industry to another. The OEC has no estimate of the impact at this time.

The net influence of w.d.s.t. on energy use for transportation is also very difficult to estimate. During the summer the extra light is sufficient to make credible the supposition that more auto travel will ensue in the evening. This seems much less probable in winter because the amount of extra daylight after work is not so great and because weather is not nearly so conducive to travel away from home. This point highlights the importance of accompanying actions such as w.d.s.t. with a vigorous public awareness campaign. It also demonstrates the potential importance of providing the requested authority to the President to impose, if deemed necessary, direct controls on gasoline consumption.

The Netherlands has just instituted w.d.s.t. as an energy conservation measure. We have not yet determined what analytical information was considered in making that decision. Great Britain abandoned w.d.s.t. in 1969—despite generally favorable citizen attitudes—in deference to complaints from the northernmost latitudes where winter nights are so long.

In terms of actual changes in energy consumption, the option of w.d.s.t. could save at the rate of about 1 percent—a very significant amount. Whether or not savings will accrue depends largely on public response. We know that recent public response in the Pacific Northwest, in response to a very active campaign, has enabled a decrease about 8 percent under projected demand, so the public demonstrates how heroically it can respond when it perceives the problem.

The CHAIRMAN. Yes, it is working very well out in my area.

Dr. GIBBONS. Recent public opinion surveys indicate that about two of three citizens approve of winter daylight saving.

The CHAIRMAN. Ironically, we started energy conservation programs in Washington State many, many months ago, because we had a warm, dry winter. We need a lot of snow to produce hydroelectric power, but the response was very good. People have done a good job of energy conservation and every public utility participated in this. They changed their advertisements from the promotion and sale of electricity to conservation. It proves you can get public response.

Dr. GIBBONS. Yes, sir. We believe the action in the Pacific Northwest, while it is an extremely traumatic thing for that part of the

country, provides us with a nationally important learning experience that will assist in meeting the whole Nation's problems in the months ahead.

If w.d.s.t. were instituted, it would be interesting to get some measure of its effectiveness. However, in the near future the directly measurable effects would probably be obscured by other perturbations in our energy use pattern. Despite this problem we believe it is important to develop a more quantitative basis for estimating energy impacts of w.d.s.t. in order to make a more rational judgment of whether or not to undertake "double D.S.T." next summer. Because of the highly perturbed nature of the energy system, the evaluation of W.D.S.T. impact will probably have to be through micro rather than macro techniques.

The CHAIRMAN. As I understand it, then, your general suggestion is that we have a limited time period. Is that right?

Dr. GIBBONS. Actually, I believe, sir, the evidence favors a year-round one-hour-a-day light saving time—

The CHAIRMAN. I suppose there is good reason for a limited period because we can find out a little more about year-round daylight time. But I think some people are concerned that either we are going to have it or not have it. It is the nuisance that bothers them. And either we have it or not have it and maybe allow the States to go ahead and do what they wish. But we cannot have a hodgepodge, can we?

Dr. GIBBONS. That is exactly right.

The CHAIRMAN. Maryland cannot have one time and the District, or Virginia another time. This is a problem the community will have to solve.

Dr. GIBBONS. I think we have a national problem and it is best addressed, as you are doing, on a national basis.

I believe evidence in favor of such a year-round system is such that perhaps one should simply make the commitment, as I believe is in S. 1260 that the original act will be amended, and then, if the evidence begins to show that this was not wise then we can amend the basic act.

The CHAIRMAN. This research was done by the Department, was it not?

Dr. GIBBONS. This attachment was prepared by Dr. Bauer of the OEC. It is a collection of existing information and commentary based on telephone calls and other inquiries made by Dr. Bauer, preparation of information that led to my testimony.

The CHAIRMAN. If we did enact year-round daylight time, we would have to continue our research on it. We should make that a continuing responsibility. One of the departments, the Interior Department or Interior and Transportation together because it involves so much transportation. I think we have to keep looking at it.

Now, another problem.

When do you think the winter daylight saving should take effect?

Dr. GIBBONS. Would you like for me to respond first?

The CHAIRMAN. Both of you can answer it.

Dr. GIBBONS. I think the best answer to that problem would come from my colleague from the DOT.

Dr. HALPERN. Mr. Chairman, in light of the fact that a change in the time would affect the scheduling of transportation, for example, there would have to be a reasonable period of time, let us say on the order of 2 weeks, for the transportation companies, services, to adjust to this. So we would say immediately after some reasonable period of time, on the order of 2 weeks.

The CHAIRMAN. There is a problem of changing schedules. You have to reprint them all. You have to give transportation a reasonable period of time to adjust if and when the bill is passed.

Dr. HALPERN. It is a pleasure to appear here today. I am pleased to support the proposals of the committee, particularly the one proposed by Senator Stevenson, to extend daylight saving time for 1 year. I would like to submit my statement for the record.

The CHAIRMAN. It will be made part of the record.

Dr. HALPERN. Mr. Stephen Grossman is on my right. He is charged with the responsibility of administering the uniform time act, and on my left is his colleague, Mr. Robert Ross.

Our position, Mr. Chairman, is as follows: We have been asked and invited to address four bills. The first, S. 385, would in fact shorten a period of advanced time, and as we had indicated to you in a letter of March 20th, we oppose such a proposition.

The other bills before this committee, S. 1260, S. 258, and S. 2602, Senator Stevenson's bill, would propose extending advanced time on a year-round basis, and as you have pointed out, Mr. Chairman, the President has already indicated his willingness to support, and desire to have the authority to extend daylight saving time on a year-round basis.

The CHAIRMAN. Well, as a matter of fact, we are glad to have the President give us his support.

But you would think somebody just discovered this down there.

All right, go ahead.

Dr. HALPERN. Mr. Chairman, I might be able to spend my time in the few minutes we have this morning to discuss these important issues by discussing the proposal in terms of possible consequences for transportation operations, transportation safety, and transportation energy.

We have not yet, of course, learned how to add more daylight hours to our day, but we can, by changing the clocks, as is proposed, perhaps make more effective use of available daylight.

I should point out, however, that shifting the clock time to provide for an additional hour of daylight in the afternoon in exchange for an hour of daylight in the morning would with respect to the winter months have both advantageous and disadvantageous effects, which I would like to discuss.

The degree of advantage or disadvantage is in part a function of the location of a given area within a time zone, because regardless of whether daylight saving time is observed, sunset and sunrise occur later as one proceeds westward.

At the present time it is dark during the evening rush hours, but light during the morning rush hours. Daylight saving time would result in a dark morning rush hour for some people, and a dark evening rush hour for some, but light during both rush hours for many others.

Accident statistics would indicate a higher rate of automobile accidents during dark hours, and a higher rate of accidents during evening rush hours due to fatigue, anxiety, and alcohol consumption occurring during the day.

Now it would appear that there might be some lessening of the accident rate by having the evening rush hour occur to a greater extent in the daylight.

The British I understand——

The CHAIRMAN. Let me interrupt you. DOT statistics show that there are more accidents in the so-called evening hours than in the morning hours, is that correct?

Dr. HALPERN. That is correct.

The CHAIRMAN. There are several causes. It may be drinking. Everybody rushes to get home, but nobody rushes too much to get to work.

Anyway, there are some other factors involved, and therefore, if you had more light in the evening, is it your contention you think there would be lessening accidents?

Dr. HALPERN. This is our conception, yes, sir. May I point out, sir, that the NHTSA of the DOT currently has underway a study to take a harder look at and to get better handles on the effects of daylight and darkness and times of day on accidents, and to determine the correlations. The administration hopes to have such a study completed fairly early next year, perhaps as early as February.

The CHAIRMAN. DOT has the responsibility for the enforcement of any time law that we may pass and the present Daylight Saving Act.

Dr. HALPERN. That is correct.

The CHAIRMAN. All right.

Dr. HALPEN. Now there is a disadvantage. The morning rush hour is, as you know even now, generally more concentrated than is the evening hour, and having that rush hour occur during darkness as a consequence of daylight saving time during winter in some areas, might increase the concentration of traffic due to traveling at somewhat lower speeds.

With respect to savings of gasoline as a consequence of shifting to year round daylight saving time, we do not foresee any material change in motor vehicle fuel consumption in and of itself, but we do feel that daylight saving time would make an important contribution when combined with other steps to reduce fuel consumption across the board as my colleague, Dr. Gibbons, has pointed out.

Shifting from 1 hour of daylight from the morning to the evening might have some adverse effect upon schoolchildren who, generally, will be traveling to school or waiting for schoolbuses in the dark.

This problem would become more aggravated the farther west the school district is located in the time zone. The situation, however, is susceptible to solution at the local school board level through adjustment of school hours.

We don't believe this is an obstacle to the proposition but that it

is a problem that should be attended to and given attention by this committee in the first instance.

We do not believe that there will be any problems affecting the scheduling of interstate transportation services. Some adjustments will have to be made by carriers engaged in foreign commerce, especially those serving Canada and Mexico, but these should not be disruptive of their operations in this connection as I pointed out earlier, Mr. Chairman.

We believe that a reasonable time should be allowed for the carriers to adjust their schedules before making effective the daylight saving time extension.

We understand that measurable nontransportation energy savings would occur as a result of year-round observance of daylight saving time in the large. I would say for the record that any possible detriment to transportation operations and safety resulting from year-round daylight saving time would not be such as to counteract the energy conservation benefits.

That is a net estimate. While the present legislation provides for exceptions in certain cases, we would recommend that in response to the energy emergency—the requirements—the requirements be uniformly applied within time zones.

In other words, we support Senator Stevenson's proposal in his bill that there be no exemptions from the Advanced Time Act. I would like to thank you, Mr. Chairman, for the opportunity to make these brief remarks, and my colleagues and I stand prepared to answer questions.

The CHAIRMAN. I appreciate your testimony, and I know it is very difficult to estimate some of these things, but in any event you advocate quite strongly that whatever is done should not exempt States, but should be mandatory nationwide.

Is that correct?

Dr. HALPERN. Yes, sir. There is a large consideration here. In the first instance, we are concerned about dealing with an emergency fuel situation, and we believe that it is essential that advanced time be uniformly implemented across the United States in an effort to make the most savings in the fuel area.

The CHAIRMAN. You get to a serious problem on airplanes. Now there has been some talk about reduced speed, but if we reduce schedules on airplanes the people are going to travel anyway. But they are not going to travel on an airplane. So we have to encourage transportation where the least amount of energy will be used.

You talked generally about the living pattern in the different areas of the United States involved in transportation, and you suggested that we seriously consider a phase in slow enough so that the transportation people can accommodate to it, and you have expressed an opinion that you do not think State option is desirable as it relates to the transportation.

Dr. HALPERN. That is correct.

The CHAIRMAN. Senator Stevenson?

Senator STEVENSON. Thank you, Mr. Chairman.

The CHAIRMAN. I want to say to both these witnesses and the people that are here that we deeply appreciate you coming here and

giving us your views on such short notice. If you had had more time, you might have been able to have more facts, but it was short notice, and the statements are very good, and we appreciate it.

Senator STEVENSON. Mr. Chairman, I want to associate myself with your comments. The Department of Transportation and the Office of Energy Conservation within the Department of the Interior have given serious thought and work to this subject.

I think they deserve our commendation as well as our thanks. S. 2602 provides for a 1-year experimental period. Is that long enough to permit an in-depth study of the impact of daylight saving time, or should the period be longer?

Dr. HALPERN. May I answer that from a transportation viewpoint? We do not have a definitive position yet. Our Federal Highway Administration experts do not feel that it would be long enough to develop adequate statistics.

However, we are not prepared at this moment to render a judgment of that sort. That analysis was communicated to the chairman of the Committee on Interstate and Foreign Commerce with respect to bill H.R. 7393 on June 22.

Senator STEVENSON. Does the Office of Energy Conservation have any thoughts on that question?

Dr. GIBBONS. Generally, I agree with the statements just made. I believe that particularly for the transportation sector and some of the impacts of the way individuals respond that it may take 2 or 3 years before these things could be sorted out, unless one engaged in a very expensive study.

I believe, however, that within about 1 year, one should be able to sort out fairly well the electrical part of the issue. But more specifically I believe a longer time might be preferable.

Senator STEVENSON. We might want to consider, perhaps, a 2-year period, which of course could be shortened or lengthened later on if that were indicated.

Which agency would be the most appropriate to conduct the study? S. 2602 provided for a study in the DOT. Would the study more appropriately be conducted by the Office of Energy Conservation, or should there be a joint study? How should we address ourselves to that?

Dr. HALPERN. We would defer to the Department of the Interior for any analysis of the overall energy impact. We do not believe this is within our capability or cognizance. We would contribute information analyses in the area of transportation energy and transportation safety.

Senator STEVENSON. So if the study were to be conducted by the Office of Energy Conservation, the necessary input on the impact on transportation and crime and other questions could still come to the office of Energy Conservation from other agencies.

Dr. GIBBONS. Yes, sir. We believe that any meaningful analysis of this impact would of necessity involve transportation, probably in the urban belt, and it should be an interagency effort.

Dr. HALPERN. Senator Stevenson, may I observe for a moment the extent to which we are coordinated in this important area? Dr. Bauer, who is sitting to the right of Dr. Gibbons, during the past

year was a White House fellow in the DOT, and he was one of our principal fuel conservation analysts, and he worked very closely with my Office and personally with the Secretary.

Now he has moved over to work with the Office of Oil Conservation as Deputy to Dr. Gibbons. So we are very much together, and in almost daily communication.

Senator STEVENSON. I think you addressed yourself to the impact of daylight saving time on traffic accidents. I would like to offer for the record a study that has been given to me by the National Safety Council, which indicates that the rate of traffic fatalities during the evening rush hours is more than twice the rate during the morning rush hours.

Schoolchildren, presumably, and their parents could be inconvenienced by daylight saving time, but schools could adjust their schedules to minimize that inconvenience.

You also said this is a question that the committee should address itself to. Now, school hours at the local level are set by local school superintendents and school boards. How could this committee address itself to that?

Dr. HALPERN. I was really saying, Senator Stevenson, that I feel that the members of the committee ought to be cognizant of some of the secondary and tertiary consequences of a move that might have primary objectives that are highly desirable, and secondary objectives that may not be.

For purposes of making the public cognizant by taking into account such problems, there are other problems that might arise, and I am speaking not as an expert, but simply as an observer attempting to get at the facts involved here. For example, the problem that many small radio stations have is that they are licensed to operate only during daylight hours.

They, under daylight saving time in some instances, might come on the air after schools begin, so there won't be an opportunity for them, as the local station, to provide early announcements about school closings and hour changes and so on. I bring this to your attention, because we have to consider some secondary consequences.

The CHAIRMAN. They operate from sunup to sundown, no matter what time it is. The theory in the license is the smaller stations would interfere with the all clear channel stations.

This has been a constant fight, but daytime broadcasters still are limited to sunup and sundown, no matter what time it may be. The FCC will be here and comment on that problem. But you pose a problem.

Dr. HALPERN. I am simply requesting that the committee consider some of the secondary effects, and then at least advise the public as to what might be done as an educational matter.

Senator STEVENSON. Dr. Halpern, you indicated that it might take the transportation industry about 2 weeks to adjust to daylight saving time.

How do you feel about making the effective date of daylight saving time the first Sunday after the 2-week period following enactment?

Dr. HALPERN. Yes.

Senator STEVENSON. Would that be a reasonable way of accommodating daylight saving time to the transportation industry and any other industry?

Dr. GIBBONS. I think 2 weeks is possible sufficient time, particularly since you speak of enactment. I think the feeling that this is coming is already very strong, and therefore the transportation companies are already beginning to think about their schedule changes, and it seems to me that the wee hours of Sunday morning is an obvious choice.

Dr. HALPERN. I would concur, Senator.

Senator STEVENSON. Just a final question, Mr. Chairman.

Dr. Gibbons, do you believe there are potentially significant energy conservation measures other than daylight saving time, other than those mentioned by the President that have not received public attention and that we should be addressing?

Let me cite one example. Much of the attention so far has been focused on the need to reduce consumption of fuel for heating purposes in the North.

Shouldn't we also be addressing ourselves to the need for decreasing the consumption of energy for cooling purposes in certain purposes in certain parts of the country? If we are going to turn the thermostats down in the North, shouldn't they be turned up in certain parts of the South?

Mr. GIBBONS. Yes, I agree with that. Particularly since next summer is only about 6 months away, and there are many options for lowering the summer peakload on electricity which uses oil and other precious fuel sources.

I think there are a great variety of options. The immediate ones have to do with the transportation sector which the President has addressed. I think he addressed it in his message on Wednesday night. There is a question how quickly these can be implemented under voluntary versus a more mandatory basis.

I think the focus on winter heating is an appropriate one, because the problem is in the distillates, the heating oil, and also because the individual actions of Americans when taking it over 200 million of us, moving our home and working temperatures to 68 degrees will provide us immediately with an improved environment and energy-wise with a very, very large saving.

Now there are a large number of other smaller options, but very important options, in the longer term. We should be about them very quickly. These have to do with changing the way we build our buildings.

Many of America's buildings are built in a time when energy was infinitely available, it seemed, and very, very cheap, and as a consequence we underinsulated practically every building we have.

This applies to both summer and winter energy savings. We are underway now with a voluntary labeling program which may have to be stiffened—we will have to see—which would point out to the consumer that there are, for example, some air-conditioners which for nearly the same price can be more than twice as efficient in delivering a given amount of cooling for a given input of energy.

So we need to look back at our regulations, the way we buy things and make things, our building standards, and have a new look at these in the light of energy now, not as infinitely available cheap thing, but as a finite resource for which we must do a better job in conserving.

We are devising some material that we hope will be available very shortly that will be a little better thought of shopping list as it were for the average American. We will try to quantify the various things that the homeowner can do around the home, and we will try to get this information out as quickly as we can. It will cover all the options that the President had in his message and others that are associated with it.

Senator STEVENSON. Thank you.

The CHAIRMAN. Senator Long, do you have any questions?

Senator LONG. Doesn't this energy crisis that is on us now pretty much result from a lack of forehandedness and planning in advance for when foreign powers decide not to make energy available to us?

There are some of us who have been maintaining for 20 years that we ought to maintain a capacity to provide all our own requirements of energy, come what may, and that the amount that we bought from the world market ought to be at least covered by an excess capacity at some point where we could make up the shortfall if necessary. Wasn't that the theory of the amendment that some of us tried to implement for a long period of time?

Mr. GIBBONS. Sir, I am not sure I am familiar with the Defense amendment you speak of.

Senator LONG. We started out trying to say that we would try to produce, let's say, a percentage, and we would try to maintain the capacity of the domestic fuel industry to produce our entire requirement. Then if we could buy cheaper somewhere else we would try to have a capacity in this country to step up production. So when we had the 1956 Suez crisis, as I recall, we were proceeding under a type of arrangement where we actually were maintaining a capability, and we had a lot of wells that we were producing at about 80-percent capacity, we turned them up to 100-percent capacity, and some of them we even produced beyond the optimum conservation points.

But we had the capacity not only to provide our requirements, but we were able to divert all that Venezuelan oil from the United States over to Europe to help meet their problem.

Now wasn't that pretty much the theory at the time of the Suez crisis? And wasn't that—are you familiar with that Defense Amendment Trade Act which said, in effect, we were going to maintain an adequate fuel industry to provide our requirements in emergencies?

Mr. GIBBONS. I seem to recall that, sir.

I am not intimately familiar with the act. I think there is a unanimity of feeling now about the need for America to become more self-sufficient, in its energy resources. We are totally dependent on other sources in the world for our supply of tin, titanium, nickel and other commodities, but you can't recycle energy. It goes one way.

Senator LONG. But there are certain concepts where we ought to

get our thinking straight, and I think we ought to have people like you understand it, and all of us in this government. Otherwise we are going to keep finding ourselves in kind of mess, every time the Arabs decide to punish us, or in other emergencies, some of which we can't foresee at the moment.

When a country operates as this one does, energy, and I am talking about total energy, is so important to us that it ranks right behind water, or air. You have to have air, or you can't last 5 minutes, and you have got to have water, or you can't last 3 days, and you have to have energy, or everybody grinds to a halt.

Now if you recognize the importance of it and that we have to be able to provide it, it can be done. To me the bankers' explanations make better sense than any others. You have to maintain an industry that can do it, and that means you have to pay more than the going world market price if other people in the world have lower production costs than you do.

Now I would hope that while we are talking about going on to daylight saving time and doing all these other things like turning down the thermostats in the wintertime and turning up the thermostats in the summertime, and insulating the houses more thoroughly and all that, I hope we are also planning how to avoid this mess again.

We had an act right on the statute books, which, if it had been implemented, would mean that we wouldn't have this problem right now. I am talking about that defense amendment. The idea was to let the price go up enough to maintain an energy industry in this country, and let the fuels compete with each other in terms of price.

Let the price go up to the point that the domestic industry could produce our requirements. As it stands now, our greatest shortfall is time. We don't have enough steel to drill the wells, and we don't have enough time to do any of these things, so we have to do without.

But I hope that we will recognize that we should not leave ourselves vulnerable this way, and while we are suffering this shortfall, and taking these measures to overcome it, we ought to place ourselves in position that we can carry our own weight with regard to energy, and we ought to be in an independent condition so that we could come to the aid of somebody else if we had to.

Europe and Japan are being told they have to break off diplomatic relations with the Israelis and put themselves on the sides of the Arabs.

It will take some time, but assuming we proceed to develop an energy industry in the United States fully adequate to meet our needs at all times, our Arab friends are going to come in here in a footrace and make arrangements to sell us more oil or more liquefied natural gas or something else.

I would hope by that time that we can say thanks just the same. We will be willing to do business with you in the future, but now that we have embarked upon this program, we are not going to turn back.

We are going to go ahead and develop ourselves the capability of providing our requirements so that next time you decide you are going to punish us you don't have that capability.

Mr. GIBBONS. Senator Long, I think you have touched on some very, very important points here. Let me see if I can respond to a couple of them.

One, is the point you make that there are large timelags in responding to energy problems, both in supply and demand, and we, as a nation, I believe, historically have responded when we perceive a problem. One of the problems in the energy crunch is that by the time we nationally perceive the problem it was already so close on us that our capacity to respond in that sort of short time is really insufficient to do the job, and therefore trauma occurs.

Anyway I think we look back on the early 1970's we may say it was a very fortunate thing that is what happened, that what happened in 1973 happened then and not in 1980 or 1983, when our dependence, if we had kept going in the direction we were going, would have been that much greater on an increasingly tight world market for energy resources, because given that 10-year leadtime and given that smaller impact on our total energy system, it means we can respond with that much less social and economic trauma, and we also have that much more leadtime to be about the development of two things.

One, a broadened base of energy resources, which means new kinds of energy, because some of our traditional forms of energy we know are going to be in increasingly short supply, such as natural gas, and it takes a long time to develop new kinds of technology.

Nuclear technology is a quarter of a century old, and this year is providing 5 percent of our electricity.

The same on the demand side. We know we can provide 3 percent of our energy produced in American society, but that means carefully trimming away the fat in the system, and you have to be careful that you don't get into the muscle.

The momentum of energy demand and supply is such that we are on a convergence of demand that is growing too rapidly compared to the supply, and I think the job in the 1970's will be to try to up the rate of supply, but also to turn down a little bit the growth rate in demand.

It is almost an unmanageable high number, so we have time that is in a dimension longer than our perceived—than the time we perceived the problem as coming, and we are going to have some crunch here in the early 1970's. I am personally thankful that it happened now and not 10 years from now.

Senator LONG. You made a point about some of these things. You ought to be looking at every one of those and the relative importance of them, and you ought to have stockpiles. There are some things that we can coast along on a lot longer than others.

If they cut off your supply of steel—all these automobiles we have will last a long time. We were able to get by without automobiles during World War II.

But we ought to stop distorting somebody's meritorious argument just because he might have an interest in the matter. In the last analysis we all have an interest in finding the best answer.

For years we have been facing this, and every time a man came in representing domestic production, it was said he had an ax to grind.

It is not a matter of who is right, it is a matter of why he is right. You ought to consider everybody's argument and then try to coalesce on what seems to be the best answer.

I may be as prejudiced as any lawyer who ever pled a law suit, but that doesn't mean you shouldn't hear my argument. The same goes for you.

Thank you very much for your statement here.

The CHAIRMAN. Senator Hart?

Senator HART. Thank you, but I have no questions.

The CHAIRMAN. Are there any further questions?

Senator Stevenson?

Senator STEVENSON. No, sir.

The CHAIRMAN. We thank all of you very much, and we will keep in touch with you, because if the bill is passed, you people have to get some guidelines.

Dr. HALPERN. Thank you.

[The statements follow:]

**STATEMENT OF DR. IRWIN P. HALPERN, DEPUTY ASSISTANT SECRETARY FOR  
POLICY, PLANS AND INTERNATIONAL AFFAIRS**

Mr. Chairman and Members of the Committee: I am pleased to appear before you today to discuss S. 885, a bill to amend the Uniform Time Act to shorten the annual period of advanced time to that between Memorial Day and September 30 each year, and S. 1260, S. 2568, and S. 2602, bills to amend the Uniform Time Act to provide for year round advanced time.

As you know, the President, in his address on November 7, indicated his support for authority to return to daylight saving time on a year round basis.

The basic authority for the establishment of United States time zone is contained in the Act of March 19, 1918, which authorized the Interstate Commerce Commission to establish zones and define and modify their limits from time to time "having regard for the convenience of commerce and the existing junction and division points of common carriers engaged in interstate and foreign commerce".

The duty to carry out the laws concerning time zones and standards of time was transferred to the Secretary of Transportation when the Department of Transportation was established on April 1, 1967, which was the same day that the Uniform Time Act of 1966 became effective.

The Uniform Time Act established a national policy to "promote the adoption and observance of uniform time" within the Federally established standard time zones, preempting local laws in this regard. Specifically, the Uniform Time Act provides that, unless legislated otherwise by a State (or, by a 1972 amendment, by a State with respect to that portion lying wholly within one time zone if the State lies in more than one zone), daylight saving time (which the Act calls "advanced" time) shall commence at 2:00 a.m. on the last Sunday in October. The Uniform Time Act also provides enforcement powers through injunction.

At present, Arizona, Hawaii, and the portion of Indiana lying in the eastern time zone have exempted themselves from observance of daylight saving time.

The Department of Transportation submitted its comments to Chairman Magnuson regarding S. 885, opposing the shortening of the annual period of daylight saving time (by letter of March 20, 1973), and testified on March 24, 1971, before this Committee's Subcommittee on Surface Transportation, in opposition to a similar bill, S. 664. The Department believes that shortening the period of daylight saving time would be contrary to the evidence considered by the Congress during consideration of the Uniform Time Act, which evidence showed a national preference for the six-month period. Furthermore, this would be inconsistent with efforts to conserve energy. The Department does not favor enactment of S. 885.

S. 1260, S. 2568 and S. 2602 are each similar in purpose, but would achieve their intended results in different manners. S. 1260 would repeal the Uniform

Time Act and amend the Act of March 19, 1918, to provide for the equivalent of year round daylight saving time, and grant the same enforcement powers to the Secretary as now are granted by the Uniform Time Act. S. 2568 and S. 2602 would amend the Uniform Time Act by extending the period of daylight saving time to include the period between the last Sunday of October 1973 and the last Sunday of April 1974. S. 2602 additionally would make the State exemption provisions of the Uniform Time Act applicable during this period, and would require the Secretary of Transportation to investigate, study, and report to the Congress by June 30, 1974, concerning energy conservation achieved as a result of the extension of daylight saving time.

For convenience, our comments will be addressed to S. 2602.

The Uniform time Act is administered within the Department of Transportation by the Office of the General Counsel, and the responsibility has been assigned to the Assistant General Counsel for Regulation. The basic criterion considered by the Department in carrying out its duties under the Act is the "convenience of commerce". To that we will now add the consideration of conservation of energy. To that end, and drawing upon the expertise available within the Department in matters affecting transportation operation and safety, we offer the following observations.

The number of hours of sunlight on a specific day obviously cannot be changed. The clock time during which these hours occur are subject to adjustment to make the most effective use of available light. Shifting clock time to provide for one hour of daylight in the afternoon in lieu of one hour of daylight in the morning, would, with respect to winter months, have both advantages and disadvantages. The degree of advantage or disadvantage is, in part, a function of the location of a given area within a time zone, for, regardless of whether daylight saving time is observed, sunrise and sunset occur later as one proceeds westward through a time zone. The clock differences in sunrise and sunset between the eastern and western edges of the eastern and central time zones, for example, are approximately one hour, due to the width of these zones.

At present, it is dark during the evening rush hours, but light during the morning rush hours. Daylight saving time would result in a dark morning rush hour for some, and a dark evening rush hour for some, but light during both rush hours for many. Accident statistics demonstrate a higher rate of automobile accidents during dark hours, and a higher rate of accidents during evening rush hours due to fatigue, anxiety, and alcohol consumption during the day. Balancing these facts, it appears that there might be some lessening of the accident rate by having the evening rush hour occur to a greater extent in the light.

On the other hand, the morning rush hour is generally more concentrated than is the evening rush hour, and having that rush hour occur during darkness might increase the concentration of traffic due to travelling at somewhat lower speeds. We do not foresee any change in motor vehicle fuel consumption resulting from year round daylight saving time per se, since the demand for fuel continue to exceed the available supply. However, we feel that daylight saving time will make a contribution which combined with other steps will help reduce fuel consumption.

Shifting one hour of daylight from the morning to the evening will, however, have a potential effect upon school children who generally will be travelling to school, or waiting for school buses, in the dark. This problem will become more aggravated the farther west the school district is located within a time zone. This situation is susceptible to solution at the local school board level through adjustment of school hours.

We do not believe there will be any problems affecting the scheduling of interstate transportation services. Some adjustments will have to be made by carriers engaged in foreign commerce, especially those serving Canada and Mexico, but these should not be disruptive of their operations. In this connection, we believe that extension of daylight saving time year round should be effective immediately after a reasonable time, perhaps 2 weeks, to allow schedule changes and other such adjustments.

The responsibilities of the Department of Transportation include transportation policy and safety. We do not have the expertise required to evaluate overall energy needs and, consequently, cannot speak to the effect of year round daylight saving time upon energy consumption.

We understand, however, that measurable energy savings would occur as a result of year round observance of daylight saving time. Any possible detriment to transportation operations and safety resulting from year round daylight saving time would not be such as to counteract the energy conservation benefits.

While the present legislation provides for exceptions in certain cases, we would recommend that in response to the energy emergency the requirements be uniformly applied within time zones.

Thank you for the opportunity to present the Department of Transportation's views on the proposed bills. I am accompanied by Stephen L. Grossman, Assistant General Counsel for Regulation. If there are any questions, we will be glad to answer them.

DEPARTMENT OF THE INTERIOR,  
OFFICE OF THE SECRETARY.  
Washington, D.C., November 8, 1973.

#### MEMORANDUM

To: Director, Office of Energy Conservation.  
From: Deputy Assistant Director for Research.  
Subject: Information on Winter Daylight Savings Time (WDST).

In anticipation of the requirement that will be upon the Department to testify on November 9th on Senator Stevenson's Bill for Daylight Savings Time through the winter, the following summary is presented of likely energy and peripheral impacts of such an experiment. Studies that have been undertaken to date are not definitive on either the energy savings (or losses) that might occur with DST or the peripheral effects that might be experienced (crime, agricultural impacts, etc.) that can causally be associated with DST. The assessment of impacts of DST is necessarily complex, causality hard to determine, etc. Some work has been done, enough we feel to justify DST this winter, to effect a positive Federal action for ripple effect in the populace, and to save some amount of electrical energy. We feel that the risks in the winter-time of increased driving, leading to increased gasoline consumption are small. Weather and other forces (fuel shortages as amply publicized in the media), rising prices, et al all will tend to keep that risk of extraneous driving small.

In-depth studies would resolve some (but not all) of the uncertainties, but these would require at least a year to complete. Indeed, DOT (NHTSA) has suggested that three years might be required to obtain definitive data on impacts on automobile safety. A one-year trial of Winter Daylight Savings Time could be appropriate if it were included in a strong nationwide energy conservation program. WDST, as with other measures called for by the President November 7, has the potential to secure some energy savings during the winter 1978-79 heating season.

We believe that careful observation of energy consumption and other factors should be conducted throughout the trial period (with FPC, NHTSA, and other institutional support) so that DST can be evaluated as comprehensively and quantitatively as possible.

What are some of the factors affecting energy consumption changes associated with Winter Daylight Savings Time (WDST)?

Great Britain evaluated WDST in a three year trial which ended October 13, 1970. The British Isles are at about the same latitude as Labrador a thus the length of daylight hours in winter is far shorter than in any part of the United States. Nevertheless, Great Britain's experience provides some qualitative hints on what might be expected with WDST in the United States. Additional work at FPC, HEW, DOT, and the Rand Corporation also tends to provide some preliminary assessments of likely effects.

#### POWER PLANT FUEL CONSUMPTION

Winter Daylight Savings would increase residential lighting loads in the morning but decrease them even more in the evening. The total indoor lighting required in industrial and larger establishments will probably be little affected since they rely on artificial light to a very large extent. It is difficult to see that electricity consumption for motor-driven equipment will be affected. There

will be some savings in outdoor display lighting but energy use by street and highway lighting will probably be unaffected.

The electric heating load demand will be greater in the morning but lower (by a greater amount) in the evening, with a net decrease over the total day. The reduction in evening electrical heating loads permits shutting down some inefficient peaking units (or avoiding their use altogether if peak shaving is possible), magnifying the savings in powerplant fuel requirements.

It is independently believed by FPC and Rand that the adoption of Winter Daylight Savings Time would result in a decrease in fuel consumption for electricity production of the order of one percent (one-fourth percent for total energy).

Barry Riordan (Council of Environmental Quality, private communications) reached a similar conclusion, placing the savings in residential lighting load at 1.5 billion Kwh per year, including the savings attributable to reduced use of inefficient peaking generators.

The Edison Electric Institute reported that WDST did reduce electric energy demand during World War II and at the war's end, EEI estimated that some 700,000 tons of coal had been saved annually, a savings of about one percent.

It should be noted that in the early 1940's, lighting accounted for a major portion of the total electric load. Today it is a lesser amount that is regionally variable across the country. As the lighting load reduces as a fraction of total system electric load, it would be contemplated that Daylight Savings Time electrical savings would proportionately decrease.

In October, 1970, the Federal Power Commission polled the chairmen of the nine Regional Electric Reliability Councils concerning the effect of Winter Daylight Savings on power plant fuel consumption. The chairmen, in turn, polled their member power systems. Results are shown in Enclosure A. Not all the Councils were convinced that electric loads would be reduced. There was scatter in the data, perhaps some inconsistency in the way data was collected, and, indeed, as is inevitable in this business, difficulty in sorting out causality. FPC concluded that "No significant energy savings should be expected to result from changes in patterns of electrical utility loads accompanying an extension of daylight savings time."

Morton Getman of Consolidated Edison stated in April, 1978, that (based on 1972 figures) DST could shave the Con Ed peak by between 2.9 and 4.1 percent (175,000 to 250,000 kw). When initially instituted during World War II, this was quite significant, since the system peak then occurred in December. (With air conditioning, the system is now summer peaking). Charles Luce (April 11, 1978 letter to DiBona) stated that the principal advantage of DST "would be that it would help focus the attention of all Americans on the problem, and help assure their cooperation in supporting all Administration methods of conserving and not wasting electric energy. There is a further possible advantage of year-round daylight savings unrelated to energy, that it would enable more city dwellers, both workers and shoppers, to return home in daylight hours when the streets are safer."

In 1957, the state of Wisconsin adopted WDST for a five month winter season. One electric utility in the state reported a 3% reduction in energy usage but that figure is not adjusted for the other factors such as weather and load increases.

Southern California Edison believes that WDST could save of the order of 1% in electrical load, including savings accomplished by keeping more efficient units on the line (peak shaving cascade effects).

The Netherlands this weekend instituted WDST as a measure to conserve energy in the wake of the Middle East oil embargo.

William Harris of Rand is convinced that WDST could save of the order 1% on electrical energy. He bases his conclusion on an examination of load curve trends before and after the shifts between standard time and daylight savings time and vice-versa and the comparative experiences of those states which remain on standard time and those which shift. His results will be dispatched to Washington and transmitted by Mr. Ron Doctor on November 5, 1978. His work sheds some light on the major concern of how much additional trip generation might take place with more daylight (to offset savings in electrical load).

4 states on continuous standard time (Arizona, Hawaii, Indiana, Michigan).

April to May: 0.28% increase in fuel consumption.

October to November: 1.58% decrease in fuel consumption.

46 states that shift to standard time in November.

April to May: 0.48% decrease in fuel consumption.

October to November: 0.91% increase in fuel consumption.

In aggregate, there was a 0.41% decrease in fuel consumption from April to May and a 0.71% increase from October to November. Evidently, the non-shifting states do better (at least in 1971).

In 1972, the results are much less certain. The three states on standard time (Indiana left the fold) experienced an 11.79% increase in fuel consumption from April to May and an 0.83% decrease from October to November. The 47 states that shifted times experienced a 7.59% increase from April to May and a 9.30% decrease from October to November. Harris' explanation is that weather dominated these trends and that November must have been a very poor month for driving. Harris further notes that Indiana (which in 1972 went onto DST) experienced a 5.7% increase in gasoline consumption whereas the nation experienced a 6.5% increase from 1971 to 1972. Though, again, causes can't be sorted out, Indiana at least was less than the national average.

Harris offers the additional observations that the nation did accomplish a 11% reduction in electrical energy peak during World War II (when DST and other conservation measures were in effect) and that Southern California Edison believes that they could save 0.38% on electrical load due to DST and a 0.77% fuel savings (including cascade effects of more efficient units during peak periods). Pacific Gas and Electric is convinced they could operate at higher thermal efficiencies with DST.

Harris' conclusions (by phone) are as follows:

There is no definite correlation between increased gas consumption and DST;

If any tentative correlation can be hazarded, there would appear to be a minor savings in the DST states (although this is admittedly preliminary, somewhat speculative, and not causally certain)

The risks of increased gasoline consumption in the winter would be small (weather and higher prices precluding great risk) and wartime data would imply that the public will cooperate with well documented emergency restraint (*Highway Statistics*, 1971, p. 84)

Clearly, more study is required to nail down these uncertainties and the Fall experiment could provide that opportunity.

An evidence that the public is getting behind conservation measures appears in the *Pittsburgh Press Roto* section (11/4) which announces that Pittsburgh will forego the Christmas light-up night (all buildings turn all lights on to be seen from Mount Washington).

#### *Other effects of adopting winter daylight savings time*

**Confusion.**—Changing to Daylight Savings and back again in Fall is confusing for some people. Clocks must be correctly re-set. Adjustments to plane, train, and other schedules involve some expense and sometimes some confusion. If Daylight Savings time were adopted year around, this confusion would end. Les Goldman has done some checking and schedules are usually redone monthly, anyway, so a return now to DST could be accommodated with small expense at the next regular schedule change.

**Health.**—There is no evidence to suggest that a change to WDST would adversely affect health. When Great Britain tried WDST, those living in the north found the extended period of darkness in the morning had a depressing effect.

**Safety.**—Available traffic safety statistics suggest that the institution of year-round daylight saving time would decrease the number of motor vehicle fatalities and serious accidents. Under the present system of six months of standard time and six months of daylight saving time, much homeward-bound commuting by automobile is done in darkness, which is more dangerous than in daylight, and there is a lower fatality rate during the morning rush hour. Drivers tend to be more fatigued and under greater influence of alcohol in the evening than in the morning. Inclement weather common in December and January also tends to reduce visibility in the evening. Although daylight

saving time in winter would mean that more of the morning commuting to work would be done in darkness, thereby tending to increase the morning rush hour fatality rate, the factors discussed above suggest that the increase would be less than the decrease achieved in the evening. (The foregoing are DOT conclusions expressed in June to Harley Stagers.) (The full letter is Enclosure B.)

The problem of later sunrise in winter occasioned by day-light saving time would seem particularly acute for children traveling to school in the morning. The Department of Health, Education, and Welfare advises that it does not have any information which would be helpful to us in this area; however, the problem could be alleviated by postponing the time of day when school begins so that children would not have to travel to school in darkness. This postponement would be safer for the children and obviate the need for parents to jump in their cars and drive the kids to buses, schools, etc. (burning gasoline to discount electrical savings.)

When WDST was tried in Britain, the accident rate for children going to school in the morning in the dark increased despite the fact that many more parents took their children to school. In the evening, children casualties between 4 and 6 PM fell but rose again for the after dark 6-7 PM period. On balance, there may have been a slight increase in road casualties among children. Overall, WDST might have a beneficial effect with respect to road casualties. Britain had a 3.8% decrease.

**Crime.**—Children are at greater risk of assault on their way home from school than on their way to it, and there is then an advantage in having lighter afternoons.

The Department of Justice advised DOT that it felt it was difficult to quantify any effect which the institution of year-round daylight saving time may have upon the incidence of crime. According to the Department, persons intent upon committing those types of crimes which are prevalent in darkness would accommodate themselves to the later darkness resulting from daylight savings time by waiting to attempt their crimes until darkness actually falls. (But if more are home by the time darkness falls, wouldn't the crime rate decrease?)

Statistical data on crime rate as a function of the hour of the day is not kept by the FBI. However, it is likely that WDST will reduce the crime rate in the early evening and increase the efficiency of the police forces. It is believed that when darkness falls and the streets fill up with people, the crime rate probably rise. Whether this expected fall in the early evening crime rate (because people are now at home) would mean a reduction overall in total crimes (for the 24 hour period) or simply shift patterns of crime to other times is uncertain.

**Agriculture.**—The farmers, as a group, have tended to be the group most in disfavor of DST. The Department of Agriculture advised DOT that from a scientific point of view year-round DST would not have a significant effect on agricultural production. The Department cautions, however, that DST would have varying effects upon individual farmers depending on where they are in the country.

**Popular Opinion.**—In 1972, the National Research Opinion Council conducted a nationwide survey of over 1000 people asking their opinion of WDST. The results were as follows:

Of approximately 1000 responses:

	Percent
Overall approve.....	45
Disapprove .....	28
Don't care.....	4
Don't know.....	3

Farmers, as expected, are lower.

	Percent
Approve .....	82
Disapprove .....	44
Don't care.....	12
Don't know.....	4

People who disapprove feel somewhat stronger about it than those who approve.

## Reasons for DST being good for country :

	Percent
Improve social and recreational opportunity (survey done early when weather good).....	15
Would save electricity.....	12
Have light when needed.....	10
Improve Highway safety.....	10

## Reason for its being bad for country :

	Percent
Children have to go to school in dark.....	13
Bad for those who get up early.....	10
Hurt farmers.....	7

NOTE.—More details emerging from this survey are included in Enclosure C.

A more recent survey on October, 1973, using a sample of about 2500, nationwide revealed: 52% approval of year-round DST (32% prefer extra light in morning; 60% in PM), 26% don't care, 19% disapprove, and 3% don't know.

Question. Strength of feelings, 50% strong; 20% mild; 26% not strong.

Question. Good things about—14% travel easier, 8% save energy.

Question. Bad things about—17% get up in dark, 14% school children, 33% nothing bad about it.

Question. Good for country—Strongest item, next, 18% save energy; 16% recreation; 14% improved highway safety.

Question. Bad for country—Strongest item, 15% school children; 27% not bad for country.

A survey of 7000 people was made in Great Britain during the last year of their experimental WDST plan. Results were as follows :

	Percent
In favor of WDST.....	51
Undecided .....	10
In favor of old system (DST in summer only).....	39

Despite these statistics the House of Commons voted December 2, 1960 to abandon WDST. This was because members representing districts in Scotland and Ireland in the north (much farther northern latitudes than in U.S.) were so very strongly opposed to it. Other members felt the advantages of WDST were not worth annoying the outlands that much. Farmers, construction workers, and others who work outdoors exerted pressure to have WDST dropped.

## SUMMARY

DST probably will save of the order of 1% in electricity from peak shaving and opportunities to keep more efficient units on line.

(a) the real savings will vary regionally, depending upon the character of the loads being served (lighting vs. heating)

(b) the small savings will produce desirable margins for resistive space heaters that people may turn towards if fuel oil is in short supply;

There is not definitive evidence that WDST will produce excessive trip generation. Rand data, as preliminary as it surely is, would suggest the contrary, in fact. It is purely speculative to suggest that each of 60 million families might take trips of 30 miles/month because of the extra daylight (CEQ). DOT believes and OEC concurs that risks in the winter of such extra trips will be minimal both because of the weather constraints, higher prices of fuel, conservation appeals (which were responded to favorably during World War II), and the general energy focus.

WDST would be a tangible government action that would increase the credibility of conservation appeals. Coupled with a conservation appeal it could catalyze other effective public and private conservation effort. In the Northwest, savings of 6-8% in electricity have been accomplished even though, for example, the visible elimination of lighting for public advertising is less than 1%. WDST could catalyze cascaded energy savings benefits.

The experiment would provide a prompt opportunity to sort out effects, now only imperfectly understood, and approach the possibility of Double Daylight Savings Time more intelligently.

Other countries (Netherlands) have gone to DST. It would meet with public acceptance if not universal acclaim.

OEC should share concern that DDST might not be a wise idea because of possible increased transportation activity.

#### *Enclosure A*

#### **SURVEY OF EFFECTS OF CONTINUED DAYLIGHT SAVINGS TIME, ON ELECTRIC UTILITY FUEL REQUIREMENTS**

In conjunction with possible fuel shortages during the 1970-1971 winter or an even longer period, an inquiry was addressed to the Chairmen of the nine Regional Electric Reliability Councils concerning the energy savings and consequent reductions in fuel consumption which might be accomplished by continuing daylight savings time throughout the potential emergency period. The replies indicated that no significant reductions in fuel requirements would be expected to result from an extension of daylight time. The following information summarizes the responses of each of the Reliability Councils:

**Northeast Power Coordinating Council (NPCC).**—NPCC reported that any saving in fuel consumption during the winter period would be negligible. It was thought that some separation of the industrial and residential load peaks might occur and this could result in some peak load reduction which might permit improved efficiencies through reduced use of less efficient generating units. It was suggested, however, that any reduction in fuel requirement would be insignificant.

**Middle Atlantic Area Coordination Group (MAAC).**—The report from MAAC stated that reductions in generation of something less than 1 percent on week-days would be estimated to result from extended daylight savings time. Thus, if daylight time were extended for six months, the estimated reduction in energy requirements would be 500 million kWh in the MAAC area, equivalent to 235,000 tons of coal.

**Southeastern Electric Reliability Council (SERC).**—SERC reported that records of the effects of continued daylight savings time in the Virginia-Carolinas during the 1942-1943 winter period of World War II indicated a shift in daily peak loads, such that the morning and evening peaks were the same. It was assumed that a continuation of daylight time for this winter would cause a similar shift in load peaks, but there would be little effect on total energy requirements. There was an indication from several systems which already experience morning peaks that continuation of daylight time might exaggerate the morning peak. It was concluded that extension of daylight time would not be of significant help in meeting energy needs.

**East Central Area Reliability Coordination Group (ECAR).**—ECAR reported the following results of consideration of the extension of daylight time by its Coordination Review Committee. One company indicated possible savings of 100 tons of coal per month. Another estimated savings of not more than 0.5 percent at most. Others concluded there would be no fuel savings but were of the opinion that there might be a slight reduction in peak load demand. Another company reported that studies made at the times of some previous shifts from daylight to standard time demonstrated inconsistent results with one case indicating a fuel saving of 1½ percent and another indicating an increase of 1½ percent. The Coordination Review Committee was of the opinion that any fuel conservation by remaining on daylight time would be minimal and would not contribute significantly to averting any possible fuel crisis.

**Mid-American Interpool Network (MAIN).**—MAIN reviewed the matter of extending daylight savings time with operating personnel of their member companies. Opinions were that no major operating problems would be created but there were little, if any, data to support the position that such action would conserve any appreciable amount of fuel. The consensus was that extending daylight time beyond October 25 would not be advisable.

**Mid-Continent Area Reliability Coordination Council (MARCA).**—MARCA reported that the utilities in the region would expect the extension of daylight savings time to result in a shift between morning and evening peaks. The MARCA members do not believe there would be any significant reduction in energy consumption. As a group, utilities had no major objection to continuation of daylight time if it would be advantageous to the utility industry. However, it was suggested that considerable objection could be expected in the northern rural regions if daylight time were to be extended.

**Southwest Power Pool (SWPP).**—SWPP reported the following results of a survey among its members and the 17 systems replying to the inquiry: 15 indicated there would be no energy savings and two suggested some small but insignificant savings.

**Electric Reliability Council of Texas (ERCOT).**—ERCOT reported its experience has indicated that daylight savings time does not change the amount of electric power and energy consumed, but merely alters the timing of that consumption. It concluded that an extension of daylight time would not be of any benefit.

**Western Systems Coordinating Council (WSCC).**—WSCC reported that load-resource studies of the various WSCC power areas indicated that fuel equivalent to approximately one million barrels of oil could be saved by continuing daylight savings time during a period from October 24, 1970, through April 24, 1971. Estimated equivalent fuel savings ranged from negligible amounts in the power areas which account for about 56 percent of the energy consumption to as much as two percent in other power areas which account for approximately 44 percent of the energy consumption. An estimated weighted average of savings indicated  $\frac{1}{2}$  to 1 percent net savings for the period.

The overall conclusion, based on the above reports, is that no significant energy savings should be expected to result from changes in patterns of electric utility loads accompanying an extension of daylight savings time. Therefore, this is not a persuasive argument for a time shift.

#### *Enclosure B*

OFFICE OF THE SECRETARY OF TRANSPORTATION,  
Washington, D.C., June 22, 1973.

HON. HARLEY O. STAGGERS,  
*Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D. C.*

DEAR MR. CHAIRMAN: This is in reply to your requests for the views of the Department of Transportation regarding H.R. 1600, a bill "To extend daylight saving time to the entire calendar year"; and H.R. 7893, a bill "To extend daylight saving time to the entire calendar year for an experimental two-year period, and for other purposes."

H.R. 1600 would amend the Uniform Time Act of 1966 to extend daylight saving time to the entire year and vest enforcement authority in the Interstate Commerce Commission. H.R. 7893 would amend the Uniform Time Act of 1966 to extend daylight saving time to the entire year for an experimental period of two years; the bill would further require the Secretary of Transportation, not less than six months prior to the expiration of that two-year period, to report to Congress concerning the effects of the change in the period of daylight saving time made by the bill, with particular emphasis upon the effects of such change on the use of energy in the United States.

As you know, all the functions, powers, and duties of the Interstate Commerce Commission under the Uniform Time Act of 1966 (April 13, 1966, Public Law 89-387, 80 Stat. 107; 15 U.S.C. 260 *et seq.*) were transferred to the Department of Transportation on April 1, 1967 (October 15, 1966, Public Law 89-670, § 6(e)(5), 80 Stat. 939; 49 U.S.C. 1655(e)(5)).

The Department of Transportation has been examining some of the possible effects of year-round daylight saving time. Congressional hearings on the subject might assist in developing a better understanding of the matter. We are able at this time to provide some preliminary observations.

After consultation among various offices in the Department of Transportation and the Federal Power Commission, the Office of Emergency Preparedness, and private organizations concerned with the energy crisis, we conclude that the institution of year-round daylight saving time would reduce nationwide demand for electricity by not more than one to two percent. The effect would vary by region depending upon whether a region's peak demand for electricity occurs in winter or summer and the nature of the regional electrical load.

The experience under year-round daylight saving time during World War II is not particularly pertinent because then the peak demand for electricity was relatively more sensitive to lighting loads and now it is relatively more sensitive to heating and air-conditioning loads. Beyond this, there are now in common use throughout the United States many electric appliances which were not in existence during World War II. It is uncertain how these affect peak demand.

We have been advised by the Department of Agriculture that, from a scientific standpoint, year-round daylight saving time would not have a significant effect on agricultural production; that Department cautions, however, that year-round daylight saving time may have varying effects upon individual farmers in different parts of the country.

The Department of Justice advises us that it is difficult to quantify any effect which the institution of year-round daylight saving time may have upon the incidence of crime. According to that Department, persons intent upon committing those types of crimes which are prevalent in darkness would accommodate themselves to the later darkness resulting from daylight saving time by waiting to attempt their crimes until darkness actually falls.

From October 1968, through October 1971, Great Britain conducted a year-round daylight saving time experiment and produced a report very similar in nature to the report which H.R. 7393 would have the Secretary of Transportation prepare for the two-year experimental period which that bill would establish. There are two items of note from the British report (Command Paper Number 4512). First, during the period of the experiment throughout Great Britain a reduction of 3.8 percent occurred in the number of motor vehicle fatalities and serious accidents. It is not clear that this reduction can be causally related to the experimental year-round daylight saving time. Further, statistical experts in the Department of Transportation's National Highway Traffic Safety Administration advise that there is insufficient statistical information accompanying that part of the British report to enable them to determine whether the institution of year-round daylight saving time would have the same result in the United States.

Second, the social survey which forms part of the British report indicates that although those people who were interviewed generally felt that they themselves were not significantly inconvenienced by year-round daylight saving time, many of these people believed that other segments of the British population were being inconvenienced by it. Interviews with those segments of the British population believed by many to be inconvenienced by year-round daylight saving time revealed that they were not themselves inconvenienced, but felt that still other segments of the British population were. This leads us to believe that people's subjective reactions to year-round daylight saving time may not be valid indicators of how it actually affects the population as a whole, but that a well-planned social survey may be useful in determining general acceptance of the concept. The Department of Transportation is examining the feasibility of conducting such a survey. From our experience in administering the Uniform Time Act for more than six years, we would expect this to be a very contentious issue.

As you know, Parliament voted on December 4, 1970, to terminate year-round daylight saving time effective with the end of the normal daylight saving time period in Great Britain. (As in the Uniform Time Act of 1966, daylight saving time in Great Britain is observed according to a statutory formula; their observance, both before and since the experiment, is from the day following the third Saturday in March until the day following the fourth Saturday in October.) Although the social survey discussed above reveals that, at any given time, a slight majority of the British population favored year-round daylight saving time, there was strong opposition from Scotland and Northern Ireland which, being much farther north than England, were experiencing very late sunrises in winter. In response to the strong opposition from these regions, Parliament terminated the experiment in a "free" vote (party managers did not dictate an official position and freed the Members to vote their personal preferences). Considering that Scotland and Northern Ireland are farther north than every part of the United States save Alaska, such northern-region opposition may not materialize in the United States, should year-round daylight saving time be instituted.

If year-round daylight saving time is instituted in the United States, opposition may develop in an east/West sense. The history of time zone boundary relocations in this country shows a general westward movement of both the boundaries between the eastern and central zones and between the central and mountain zones. The predominant reason for this seems commercial, as more areas of the near Midwest wish to facilitate their commercial relations with the east by observing the same time as New York, and more areas of the far Midwest wish to facilitate their commercial relations with the Chicago area by observing the same time as Chicago. The result has been a feeling by many people in the western areas of both of these time zones that the time which they must observe is already one hour in advance of what it should properly be; they already consider themselves to be on a form of winter daylight saving time and summer "double daylight" saving time.

We reasonably expect that, if year-round daylight saving time is instituted in the United States, people in the western areas of these two time zones may petition the Secretary of Transportation to exercise the authority vested in him by section 4 of the Uniform Time Act of 1966 and relocate the two boundary lines eastward in an attempt to negate the "double daylight" situation that would result. If H.R. 7393 or some bill calling for a similar experiment is enacted, it would be advisable, in order to limit the number of variables, for Congress or the Secretary to declare a moratorium on such boundary relocations during the term of the experiment.

In further regard to an experimental observance of year-round daylight saving time, the statistical experts in the National Highway Traffic Safety Administration advise that a two-year experiment, such as is called for in H.R. 7393, would be too short a period of time in which to collect significant information upon which Congress could determine whether to continue year-round daylight saving time. These experts feel that a three-year experiment would produce more reliable information; they emphasize, however, that the Department of Transportation does not now have motor vehicle accident statistics under the present system of six months of standard time and six months of daylight saving time which are detailed and complete enough to make possible a comparison with the experience under year-round daylight saving time. They feel that they need one year under the present system in order to compile a suitable control base.

It should be noted that, in determining a statistical control base, efforts to gauge the effect of year-round daylight time on traffic safety may be affected by the apparent shortage of gasoline, which may induce people to form car pools or use mass transportation, thereby decreasing traffic densities. It would then be difficult to determine whether any decrease in the number of traffic accidents is attributable to daylight saving time or decreased traffic densities.

Available traffic safety statistics suggest that the institution of year-round daylight saving time would decrease the number of motor vehicle fatalities and serious accidents. Under the present system of six months of standard time and six months of daylight saving time, much homeward-bound commuting by automobile is done in darkness, which is more dangerous than in daylight, and there is a lower fatality rate during the morning rush hour. Drivers tend to be more fatigued and under greater influence of alcohol in the evening than in the morning. Inclement weather common in December and January also tends to reduce visibility in the evening. Although daylight saving time in winter would mean that more of the morning commuting to work would be done in darkness, thereby tending to increase the morning rush hour fatality rate, the factors discussed above suggest that the increase would be less than the decrease achieved in the evening.

The problem of later sunrise in winter occasioned by daylight saving time would seem particularly acute for children traveling to school in the morning. The Department of Health, Education, and Welfare advises that it does not have any information which would be helpful to us in this area; however, the problem could be obviated by postponing the time of day when school begins so that children would not have to travel to school in darkness.

The Office of Management and Budget advises that, from the standpoint of the Administration's program, there is no objection to the submission of this report for the consideration of the Committee.

Sincerely,

JOHN W. BARNUM.

(In percent)

How strongly do you approve or disapprove (Q. 100A, cycle 5, Q. 111A, cycle 6)					
	Not too strongly	Pretty strongly	Very strongly	Don't know	No answer
Do you approve of daylight savings all year (Q. 100, cycle 5, Q. 111, cycle 6):					
Approve:					
Percent of total.....	11	23	29	4	1
Percent of row.....	17	34	43	5	1
Disapprove:					
Percent of total.....	7	9	16	0	.2
Percent of row.....	21	29	49	0	.5

Is it more important to have light in the morning or evening (Q. 99C)?

(In percent)

	Morning	Evening	Don't know	No answer	N
Farmers.....	59	29	0	0.12	17
Nonfarmers.....	37	60	0	.03	566
Not working.....	37	55	.03	.04	147
Occupation:					
Professional.....	36	58	.7	5	149
White collar.....	29	69	1	1	162
Blue collar.....	35	58	.3	6	349
Urban.....	33	63	.2	4	564
Rural.....	40	49	0	10	231

Do you approve of daylight savings time all year (Q. 100)?

(In percent)

	Disapprove	Don't care	Approve	Don't know	Refused	No answer	N
Farmers.....	44	12	32	4	0	8	25
Nonfarmers.....	26	23	48	2	.5	.3	658
Not working.....	36	26	33	5	0	.6	181
Occupation:							
Professional.....	30	15	51	2	1	.6	162
White collar.....	21	21	56	0	1	1	204
Blue collar.....	20	27	49	1	2	1	381
Urban.....	21	23	53	3			641
Rural.....	32	24	42	2			272

The CHAIRMAN. Our next witnesses are a group of four, Mr. Roddis, Vice Chairman, Board of Directors of Consolidated Edison Corp., and two people from the Tennessee Valley Authority. Mr. Wells, the Assistant Manager of the Power, and Mr. Dunlap, General Counsel. Also, Mr. Alex Radin of The American Public Power Association.

Now, you fellows all come forward. Who wants to start off here? Mr. Roddis. I am Lewis H. Roddis, Jr. I have submitted a statement for the record with two attachments.

The CHAIRMAN. We will put your statement in the record in full.

**STATEMENT OF LOUIS H. RODDIS, JR., VICE CHAIRMAN, BOARD OF DIRECTORS, CONSOLIDATED EDISON CORP.; ACCOMPANIED BY ALEX RADIN, AMERICAN PUBLIC POWER ASSOCIATION**

Mr. RODDIS. Our company was the first utility to start engaging in voluntary energy conservation business. We started 3 years ago under Mr. Luce's leadership. We have studied and had experience with a great many of the problems of energy conservation, including daylight saving time which we have studied. I am not here speaking as a representative of the Edison Electric Institute, our industry association for the investor part of the industry, but I believe our views and the company's views represent what the association would feel.

We do not think that voluntarily conservation alone is going to solve the problems and we believe that meaningful Federal programs of energy conservation must be enacted, such things as national speed limit, upper limit on space heating temperatures, lower limits on air-conditioning, restrictions on nonessential lighting, and gasoline rationing programs.

An extension of daylight saving time we believe is an important part of this. We stated this in correspondence and conversations with State and Federal officials. We believe that there are energy usage reasons for this and human motivation reasons. By itself our studies indicate that daylight saving time will save energy—not a whole lot. We estimate in our own system it would save about 40 million kilowatt-hours annually, or extended nationwide, as one of the attachments shows, we believe this would result in total electric energy savings of between 3 and 5 billion kilowatt-hours annually.

To put that in perspective, that is about one-third of 1 percent of the total electric usage in this country, or about 1 month's average use in the area we serve, the 9 million people we serve in New York City and Westchester County.

A better way is to say that it is equivalent to about 4 million barrels of oil, or about 12 of the large tankers that we can land in our ports a year. Other people have used the figure of 1 percent and within the degree of error of trying to calculate these things, I think that is pretty good agreement.

That would be three times as many tankers. We do not think that is an insignificant savings, but I think there is a stronger reason for extending daylight savings time than the actual energy savings.

This is only one of the things to do to keep in front of people the fact that we have energy problems.

The immediate demand for energy in electricity, home heating, and automobile use, are all within the control of individual citizens, and motivating them to energy savings has been as essential to any real immediate relief of energy demands.

I might say that last summer I testified before a committee of this Congress in a sports shirt without a tie, because it was summertime and today I am testifying in a sweater because I think the room should be cool enough to need a sweater.

The psychological impact of the daylight saving time extension we believe will help bring home to our people the need for the individual decisions on the use of electricity, home heating, and the automobile.

I think if we do not do these things, we may get into more drastic and more dramatic reductions in the usage of electricity, even such things as blackouts which all of us are in the process of planning. We hope it does not get that bad but as a company whose fuel supply is in jeopardy to the extent of 60 percent, we have to be prepared for this.

There is one other technical point that I would like to be very clear on. A lot of people talk about peakload savings and other people have talked about energy savings. I think what we are looking at there is energy savings and the thing that we used and that is developed in the technical paper I presented for the record, is based on energy savings.

The CHAIRMAN. And not peakload.

Mr. RODDIS. Not peakload; the savings in peakload is slightly greater percentagewise.

The CHAIRMAN. Well, now, we appreciate that. I understand from your statement here that you generally agree with the thrust of all this legislation.

Mr. RODDIS. Yes, sir.

The CHAIRMAN. You agree that daylight saving time should be extended year-round?

Mr. RODDIS. Yes.

The CHAIRMAN. I have heard what you have been trying to do in a voluntary way in New York. It goes back a long ways, like our people out in Washington State including City Light and Tacoma Light and all the rest of them. We have achieved some success.

But how long you can keep up a voluntary program no one knows. People have a tendency after things quiet down a little bit to slide right back to old habits. So I think it is a compliment to your firm that you have directed your advertising program to the conservation of energy.

We have been talking about coal and gas and electricity and oil and kerosene, but we have not had much to say about nuclear power.

If this Nation is really going to survive its energy needs in the future, nuclear power has got to be a part of it.

Mr. RODDIS. We have no question about that, sir.

The CHAIRMAN. You do not build a nuclear powerplant overnight.

Mr. RODDIS. No, I have been a part of this business since the 1940's.

The CHAIRMAN. Nuclear power, I think, is the future solution for our energy needs. We can go ahead with nuclear power consistent with the environment. We can do that. I always say there is some place between Walden's pond and Charley Luce. We can do that but we have to set our goals.

Mr. RODDIS. Yes.

Could I say a few words on that?

As I say, I have been in the nuclear power business since the Manhattan District days; we are at the present moment, spending as

much time to get ready to build a nuclear powerplant as we are in building it. In other words, it takes us 4 or 5 years to get the license to proceed to build it and then it takes us another 5 years to build.

There is no need for this. I was just last week up in Canada at a plant which is, I guess, within 350 or 400 miles of this city. That plant, all four units of it, was built in a timeframe of 5 years. It can be done. It is a beautiful plant and incidentally, we have purchased a great deal of energy from that plant this last summer. It was a big help.

The CHAIRMAN. Of course that is a long-range thing. We have to meet an immediate emergency, and that is why we are here today.

Senator Hart, do you have anything?

Senator Stevenson?

Senator Long?

Senator LONG. Let me ask you, can you give any estimate as to what the difference would be to the power company should we make the breakthrough that we hope for in atomic fusion?

Mr. Robbins. I would doubt there would be any reduction in power costs from that source, sir. In the first place, the cost of power delivered to the consumer is substantially less than one-half dictated by the cost of generating it.

In other words, the cost of the transmitting of it and other services are greater than half. Of that half, substantially less than half of it is the fuel cost in a nuclear plant.

The fusion plants, which are preinvention stage completely—in other words, in the fusion business, we are back around 1942 in the reactor field, and assuming that some of the inventions that are hypothesized are made, it is going to be the end of this century before these things become practicable, and leaving out the inflation problem it is clear that the capital costs of these units will be as high or higher than any other form, and, therefore, the fact that the fuel cost is low is not going to produce a significant change in the total cost of power.

Senator LONG. I have been led to believe that a great reduction in cost of atomic power would result if we got a better way to get the power to the homes.

You now generate heat and turn water to steam and send steam through a turbine and so forth.

Now, are there any indications that someone will find a better way to move the energy from the initial time of reaction to the consumer, rather than use it to boil water?

Mr. Robbins. Senator Long, it is unlikely. You are dealing with some fundamental physical facts. The process can be improved and the efficiency can be improved, but the basic idea of a fusion reactor, particularly, will be very large. It is not a thing you are going to have in your basement. It will be much larger than even our present fission reactors. So you are still going to have to have a centralized generation of power and the getting of it from the energy in the fusion process into electricity somehow has to be a device that, at least as of now, which involves a thermodynamic process. You may be boiling something rather than water, but these all run up against some fundamental laws of thermodynamics and all of them have efficiency limits on them.

Senator LONG. If you could find a better way to get the energy than by boiling something, you might have an enormous savings in efficiency, but all those things are just in the imagination stage now.

Mr. RODDIS. They are either in the imagination stage, or in the stage of a scientific and expensive curiosity. There is a photocell which converts solar energy into electricity.

It is an expensive device. It has to be lowered by a factor of perhaps 1,000 in cost. This is not impossible, but none of us in the engineering end see that kind of breakthrough in the next 10 years.

Senator MAGNUSON. Right.

Alex, do you want to proceed now?

Mr. RADIN. I have given the committee a copy of my prepared statement. Our association represents, as you know, municipal utilities and public utility districts. We have been promoting the concept of energy conservation for some time by making available to our members various materials they can use to promote energy conservation and better utilization of energy, and we intend to intensify our efforts in the future. With regard to daylight saving time, we do not have any definitive information available as to the savings that could be achieved if daylight saving time were instituted on an annual basis, but when these hearings were announced, we made a telephone survey of a number of our utility members throughout the country, including those stretching from the Pacific Northwest to the Northeast, and including some of the large wholesale suppliers of energy, such as Bonneville Power Administration. From these surveys we concluded there would be a savings in energy consumption by going to daylight saving time on a year-round basis.

We estimate those savings would be in the range of about 1 to 2 percent.

To indicate the magnitude of savings, our members, in 1971, sold about 200 billion kilowatt-hours to ultimate consumers, and consequently there would be a savings of about 2 billion kilowatt-hours if you assumed about a 1-percent reduction, and about a 4-billion kilowatt-hour savings on the basis of a 2-percent reduction in consumption.

Translating these figures to savings in oil or equivalent, there would be a savings of about  $3\frac{1}{2}$  to 7 million barrels of oil or equivalent a year. I think that is a conservative figure, because these figures are based on 1971 data which are the most recent available from the Federal Power Commission. To bring us up to 1973 and also to take into account losses that occur in transmission and distribution of energy, we estimate that the savings of oil equivalent by the members of our association would be in the range of 4.3 to 8.6 million barrels of oil a year, which we think is substantial and worthwhile achieving.

In addition to the actual savings in energy, I would reinforce what Mr. Roddis said about the psychological impact of daylight saving time. I think it would be a means of reminding the consumer to conserve energy, and we need to do this as much as possible.

It is also important to keep in mind that lighting represents about 24 percent of the entire use of electric energy, so that anything that can be done to reduce the amount of lighting certainly would be helpful in reducing overall consumption.

Finally, in view of the fact that there is not any really definitive material available as to the amount of savings that could be achieved, we would urge that if the Congress votes to have year-round daylight saving time, the FPC, or some other agency of the Government, should make a careful study of the savings that are actually achieved. This information would be useful for future reference.

The CHAIRMAN. I think that suggestion is good. Our facts are not complete now. You made a survey up in Massachusetts, and you found the consumption of electricity went up immediately after the summer daylight saving went out. I agree with the point you make that daylight saving time on a year-round basis would have some psychological impact, because it would serve as a reminder to the average consumer of the need for energy conservation.

Now, I think that what you put together on short notice is a pretty fair representation of the entire country, rather than just one company or one department.

Mr. RADIN. We did call utilities in every section of the country, including Bonneville Power Association, Salt River Project, Fort Collins, Colorado, some utilities in the northeast, and Jacksonville Florida. Their best estimate of savings was in the range of one to two per cent, and I think that would be agreed upon by Mr. Roddis and the other witnesses here.

The CHAIRMAN. I would think out in the Pacific Northwest that the figures might be rather conservative because of the great use of electric heating which is not typical of other parts of the country. There the tendency is, just because it is light, to not turn the heat up; that is just a habit. We have so much electric heating.

You say that there would be an overall reduction in electric consumption, but there will be no reduction in the peakload hours. Would you explain that for the committee.

Mr. RADIN. Yes.

In the survey we made, only one utility indicated they might have a reduction in peak demand. Most utilities reported that daylight saving time would not reduce the maximum demand for energy, but would reduce the amount of kilowatt-hours that would be consumed.

The CHAIRMAN. All right.

Senator Hart, do you have any questions of Alex?

Senator HART. No, Mr. Chairman.

The CHAIRMAN. What about you, Senator Long, do you have any questions of Alex?

Senator LONG. No questions.

The CHAIRMAN. Senator Stevenson?

Senator STEVENSON. No questions.

[The statements and attachments follow:]

**STATEMENT OF LOUIS H. RODDIS, JR., VICE CHAIRMAN, CONSOLIDATED  
EDISON COMPANY OF NEW YORK, INC.**

Although Con Edison has been in the voluntary energy conservation business for three years—it was three years ago that we stopped selling, disbanded our sales force and started urging customers to conserve energy—we do not believe that voluntary conservation alone can contribute greatly to solutions to the energy bind our nation is now in. We are proud of the energy savings our cus-

tomers have achieved, but we think voluntary conservation must be accompanied by a meaningful federal program of energy conservation, with sanctions for violations.

We have in mind conservation measures such as a national speed limit, upper limits on space heating temperatures, lower limits on air conditioning, restrictions on non-essential lighting, and a standby plan for gasoline rationing. An extension of daylight saving time would be an important addition to this list and we have so stated frequently in correspondence and conversations with state and federal officials. There are both energy usage and human motivation involved.

By itself, daylight saving time will save some energy, but not a whole lot. On Con Edison's system, we estimate full year daylight saving time would save 40 million kilowatt-hours annually. That's only 10 percent of the 400 million kwh our customers saved this past year through voluntary energy conservation which I have already described as inadequate to the needs of the day. But, extended nationwide, our engineers estimate that year-round daylight saving time would result in total electric savings of between 3 billion and 5 billion kilowatt-hours annually. Let's be conservative and assume the lower figure, 3 billion kwh. That's equivalent to one month's average use in the area we serve, New York City and Westchester County. It's also equivalent to more than 4 million barrels of oil (160 million gallons).

That's not an insignificant saving, by any means, but I believe there is a stronger reason for extending daylight saving time than the actual energy savings that might result. Daylight saving extended around the calendar would be one of the things we can do to constantly keep in front of people the fact that we have an energy problem. The immediate demand for energy in three important fields, electricity, home heating and automobile use, are all within the control of our individual citizens. Motivating them with an energy saving habit is essential to any real immediate relief of energy demands.

So for two reasons—the limited energy savings and, more importantly, the psychological impact—Con Edison unequivocally supports an extension of daylight saving time to 12 months every year.

This is not to say that more draconian measures—banning decorative and advertising lighting, curtailing business hours, banning air conditioning, voltage reductions and even rotating blackouts on a pre-planned basis—might not become necessary. And it is not to overlook the basic need to shore up our fuel supplies, particularly our domestic supplies, and to speed research and development into new and more efficient ways to meet our energy needs. I mention these broader considerations because it is only against this background that we can properly consider the place of year-round daylight saving time.

I should like to offer for the record a reprint from the November 1 issue of *Electrical World* of a daylight saving study done by a Con Edison engineer, Ezra K. Amir, senior analyst, System Planning Department. This concludes my prepared statement, but I should be pleased to answer any questions the Committee may have.

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[From *Electrical World*, Nov. 1, 1973]

**DAYLIGHT SAVING INFLUENCES ENERGY USE: CONSOLIDATED EDISON'S INTEREST IN PROMOTING ENERGY CONSERVATION ON A NATIONAL SCALE INVOLVED EXAMINATION OF THE EFFECT OF INSTITUTING YEAR-LONG DAYLIGHT SAVING TIME**

(By Ezra K. Amir, Senior Analyst, System Planning Dept., Consolidated Edison Co. of New York)

Growing awareness of the looming energy crisis and concern with the environmental impact of rising energy consumption has renewed interest in investigating the possibilities of savings in electricity consumption by extending daylight saving time on electric energy requirements during the winter months. Consolidated Edison Co. puts potential savings for this one company at about 40-million kwhr/yr, and 3-billion to 5 billion kwhr/yr nationally.

This study addresses itself only to the question of the impact of year-round daylight saving time on electric energy requirements during the winter months. It is not intended to estimate savings stemming from daylight saving time currently in effect during summer months, nor the impact that year-round daylight saving time might have on other than electric energy requirements.

The expectation of energy and capacity saving is based on two premises: The first is that demand for electricity during the winter usually reaches its peak in the evening hours. This is confirmed by figures in *Electrical World's* 1971-72 winter-peak-load survey, which showed that 12 of the 18 power pools included in the survey peaked at 6 p.m. or 7 p.m. The second premise is that an early return from work due to daylight saving, in terms of sunset, would result in a reduced lighting load during the peak evening hours.

It is to be expected, therefore, that extending daylight saving time to the full year would reduce winter peak-load requirements and would produce some saving in energy consumption. From the standpoint of individual electric utilities, systems that peak in the winter stand to gain most in capacity saving under daylight saving time.

#### METHODOLOGY

The time of sunset plays an important role in effecting electricity savings under daylight saving time. An appropriate approach, then, for estimating the effects of daylight saving time would be to obtain and use hourly lighting-load data for two periods which simulate the conditions of lighting requirements that exist prior to and following the replacement of standard time by daylight saving time. Actually, lighting needs are affected by the timing of zero-foot-candle natural light, which is determined by the time of sunset and the density of the overcast, if any. This approach has been followed in this study to estimate the saving to a specific system, that of Consolidated Edison.

The estimating methodology used here can be applied to other electric systems to assess the impact that can be attributed to substituting daylight saving time for standard time, assuming that requisite load data are available. Since the sun sets at different times in different locations, however, and because the requisite electric load data are not available on a national basis, it is not feasible to use this approach to make aggregate national estimates of electricity savings. Nevertheless, a range of national estimates can be made by using the results obtained for Consolidated Edison, and those of an EEI analysis made in 1946 for a similar purpose.

Hourly lighting data are rarely available to individual electric systems, and Consolidated Edison is no exception. This means that the service classifications that would be affected by replacement of standard time by daylight saving time had to be determined. The service classifications that would be affected most, of course, are residential and street lighting. Consolidated Edison load data indicate that winter daylight saving time can save about 75 Mw in street-lighting demand, coincident with the system winter peak.

Since the company's load data for any service classification are aggregative—that is, they show the total load by each service classification irrespective of the kind of use, it is impossible to estimate the saving in residential lighting due to daylight saving time unless suitable lighting data can be obtained. This data deficiency was overcome by using results of the National Survey of Residential Lighting Load, from the Report of Load Research Committee of the Assn of Edison Illuminating Companies, 1959-60 and 1960-61. Those survey results, here applied to Consolidated Edison, were derived from a sample of electrical utilities with average energy use and average December load per residential customer comparable to, though slightly higher than, Consolidated Edison's data for 1970.

In addition, test results which refer to two separate periods, Dec. 8 to 21 and Feb. 16 to March 1, were used. The significance of the choice of these test periods is that the time of sunset occurs roughly an hour later during the second period than it does in the first. The times of zero-foot-candle natural light differ by about one hour over the two periods. This means that, if daylight saving time were in effect in December, the daily residential lighting load would be expected to be similar to that which now occurs in February.

In December, the lighting load per residential customer at the time of Consolidated Edison's system peak was 70 watts higher than it was in February (Table I). For Consolidated Edison, with 8-million residential consumers, this saving would amount to 200 Mw. Hence, the total savings in the winter peak due to daylight saving time would be approximately 300 Mw, consisting of 75 Mw of street lighting, 200 Mw of residential, and a nominal 25 Mw saving in commercial lighting.

TABLE I.—AVERAGE WEEKDAY LIGHTING LOAD, WATTS/CUSTOMER

	Dec. 8-21	Feb. 16-March 1	Difference
Half-hour ending:			
7 a.m.....	110	80	30
8 a.m.....	80	50	30
Total, 7-8 a.m. <sup>1</sup>	190	130	60
4 p.m.....	50	40	10
5 p.m.....	150	80	70
6 p.m.....	270	200	70
7 p.m.....	300	280	20
Total, 4-7 p.m. <sup>1</sup>	770	600	170

<sup>1</sup> These totals are taken as estimates of the watthours consumed during the indicated hours.

<sup>2</sup> The December load data exclude Christmas lighting.

## EFFECT ON CONSUMPTION

Extending daylight saving time to the full year is also expected to affect energy consumption. During the evening hours, some saving in energy consumption will be realized, though this will be partly offset by increased energy consumption during the morning hours. Table I shows that the afternoon saving in lighting requirements per customer is 170 whr per day. On the other hand, the impact of the late sunrise caused by the hour difference under daylight saving time, which can be estimated by comparing the lighting needs in December and February, would be to increase energy consumption by approximately 60 whr. Thus, the daily net saving in energy sales per customer would be 110 whr. The total saving in energy consumption in Consolidated Edison's service territory would be 40-million kwhr, about 0.5% of total residential sales.

Assuming that this percentage saving in energy consumption is roughly applicable to the United States as a whole, then the national savings in energy consumption that would accrue from extending daylight saving time to the full year would be about 8-billion kwhr/yr. For comparison, a separate analysis has been made to estimate the national saving directly, Table II compares national monthly sales per residential customer for the last year that 12-month daylight saving time was in effect (1944-45) with the following year (1945-46).

TABLE II.—EFFECTS OF ABANDONING DAYLIGHT SAVING TIME, KWH

Month	Sales per residential customer		Increase		
	1945 <sup>1</sup>	1944	Total	Normal	DST
October.....	99.6	93.3	6.3	5.6	0.7
November.....	107.9	98.3	9.6	5.8	3.8
December.....	116.6	105.8	10.8	6.1	4.7
	Sales per residential customer		Increase		
	1946 <sup>1</sup>	1945	Total	Normal	DST
January.....	129.8	115.6	14.2	6.4	7.8
February.....	123.7	110.8	12.9	6.6	6.3
March.....	115.4	104.8	10.6	6.9	3.7
April.....	108.3	98.4	8.9	7.1	1.8
Total.....					28.8

<sup>1</sup> No daylight saving in effect.

Source: EEI Bulletin, August, 1946.

The EEI estimate of increased energy consumption attributed to the abandonment of daylight saving was derived by deducting the "normal" increase from the total increase during the months affected, yielding an increased used of 29 kwhr per residential customer. This increase constitutes about 7% of estimated lighting consumption, and 2.4% of total consumption per residential customer in 1945. The question then becomes: What would the comparable estimates be for, say, 1972?

Table III shows that electricity use for lighting generally declines, percentage-wise, with an increase in total electricity use. In 1972, with average residential consumption of 7,690 kwhr, lighting use is expected to account for approximately 15% of the total. If we assume that about 7% of annual lighting use in 1972 is attributable to reinstatement of standard time, as in 1945, this would be about 1% of total use by residential customers—equivalent to a 5-billion-kwhr saving. It may be concluded, therefore, that the two estimating approaches yield a national saving in electricity consumption in the range of 3-billion to 5-billion kwhr/yr.

TABLE III.—ANNUAL ENERGY USE PER RESIDENTIAL CUSTOMER

Total kWh	Lighting kWh	Lighting, percent
1,670	515	31
3,262	894	25
6,836	1,244	18

Source: Assn of Edison Illuminating Companies.

#### TESTING THE ESTIMATE

Before leaving this discussion, it is necessary to assess the EEI estimate 29 kwhr additional use per residential customer in 1945-46. This estimate depends critically on EEI estimates of "normal" monthly use per customer, as shown in Table II. Obviously, any errors in estimating "normal" use would introduce distortions of the same magnitude in the additional consumption attributed to standard time.

Inspection of the growth pattern in average use per residential customer indicates that EEI estimates are reasonable. The average use increased as follows: 1940 to 1942, 3.6% in each year; 1943, 4.7%; 1944, 1.8%; and 1947 to 1950, variable growth rates ranging from 7.7% to 8.7% annually. These data show that the growth rate was low during the early years, zoomed to 7.8% in 1944, and maintained similar percentage increases during 1947 to 1950.

This growth pattern suggests that the growth rates during the intermediary years 1945 and 1946, exclusive of the effects of daylight saving time, were similar to those experienced during the immediately adjacent years. Therefore, we can interpolate the growth rate for November, 1945, to April, 1946, exclusive of the effect of the shift to standard time, from the growth rates in 1944-45 and 1946-47.

The interpolation yields an estimate of 6.6% (average of 5.6% and 7.7% in Table IV). That is, while total increase in electricity use per customer was 67 kwhr during the months affected in 1945-46, normal growth would have been only 42 kwhr. Thus, the remaining 25 kwhr can be attributed to the return to standard time. This figure tends to reinforce the EEI estimate of 29 kwhr. Therefore, the estimate of 5-billion kwhr savings in 1972, based on EEI assumed normal increases, is a reasonable one, given the growth pattern of energy use per residential customer.

TABLE IV.—USE PER RESIDENTIAL CUSTOMER<sup>1</sup>

	1943-44	1944-45	1945-46 <sup>2</sup>	1946-47 <sup>2</sup>
KWh/res. cust. ....	601.3	634.7	701.7	755.8
Percent change.....		5.6	10.6	7.7

<sup>1</sup> During the months affected by Daylight Saving (November—April).

<sup>2</sup> Standard Time in effect during the affected months, November—April.

#### THE IMPACT OF ENERGY CONSERVATION

(By Louis H. Roddis, Jr., Vice Chairman of the Board, Consolidated Edison Company of New York, Inc.)

When this seminar was proposed some months ago, its subject could not have seemed more timely. Now the rush of events has added a note of emergency to any consideration of energy conservation.

My own Company's situation provides an example. Right now, Con Edison is

threatened with the loss of 60 percent of its fuel oil because of events in the Middle East. We've had to ask for exemptions from environmental regulations to allow us to burn high-sulfur oil and coal—if we can get it. And we've indicated our willingness to accept and enforce conservation measures far more stringent than most persons were willing to consider seriously only a month ago.

About 180 years ago, an English poet had something to say about energy. William Blake wrote that "Energy is Eternal Delight."

We may agree with the poet about the importance of energy without concurring that it is today, in all of its aspects, an "Eternal Delight." Certainly, producing transmitting and distributing *electric* energy these days seems more like an "Eternal Fright," to keep the rhyme if not the reason.

Another Englishman, an unnamed present-day government official quoted recently in the New York Times, may have said something more pertinent, albeit not in rhyme. He suggested that it is simply unfair for a nation with only 6 percent of the world's population to consume one-third of the world's energy.

All of which serves to remind us, if we need reminding at this point, that we are going to have to solve our own energy problems ourselves. Not just because people in other energy-short nations may not be sympathetic with our plight. Not just for the sake of comfort and convenience and our standard of living. We must solve our own energy problems if we are to be masters of our own foreign policy. Petroleum today is a mortgage on our standard of living and on our foreign policy that we have placed in the hands of foreign countries, large and small.

In the past, as regard the energy crisis, we as a nation have not looked far enough ahead. Now we must start trying to see far enough ahead to avoid the worst—by assuming the worst, and preparing for it. For all that has happened recently, I still do not perceive in official Washington, with some notable exceptions the sense of urgency necessary if we are to solve our own energy problems. There still seems to be a widespread belief that everything will turn out all right in the end. If our leaders do not start assuming the worst, we will not take the steps that are necessary.

#### SOME STEPS

There are many steps that I and my associates at Con Edison think are necessary. Here are some which will produce immediate results, some mid-term benefits, and other long-term solutions to the energy crisis. As a nation, we should move swiftly in all of the following areas.

*First*, we need an energy conservation program stronger and tougher than anything proposed to date—not just a voluntary program of mild self-denial, but a mandatory conservation program with enforcement. I will come back to this point and devote the bulk of my remarks to it.

*Second*, exemptions from environmental regulations should be granted to permit electric utilities to burn coal and oil with higher sulfur content than presently allowed, and for as long as fuel supply conditions require. Allocation of cleaner fuels should be made to the areas which need them most. I do not propose any permanent weakening of hard-won environmental standards. But I do think that in light of the problem, and in exchange for stringent energy conservation measures, it is in the public interest to bend environmental standards a little.

*Third*, we should immediately start building the necessary storage facilities and accumulating a 120-day emergency national reserve of fuels. If that takes more dollars than we'd like, we still should do it. If it takes rationing, we should do it anyway. This will help uncouple our daily problems from longer term considerations.

*Fourth*, we need to bring existing type nuclear power plants into being faster than the present construction and licensing cycle allows. Other nations can go from decision point to power in nuclear plants in times approaching 5 years—as we once did. There is no real reason why this time cycle has to be currently accepted 10–12 years. Nuclear energy has to become a major part of the solution to our present energy crunch.

*Fifth*, end use controls on natural gas should be broadened to permit use of gas for boiler fuel, and prices for new natural gas should be substantially increased.

*Sixth*, there should be tax incentives for increasing refinery capacity within our shores, and for further encouraging the development of our domestic oil, oil shale and coal. When one looks at the full implications of the current imbalance of payments, tax incentives appear to be a small price to pay for improving domestic supplies, with concurrent improvement in national security.

*Seventh*, the Alaska pipeline should be built as rapidly as possible.

*Eighth*, exploratory drilling on the Continental Shelf of the eastern United States should commence so we can at least know that it is out there and crank into our calculations either the absence or the presence of gas and oil.

*Ninth*, we need faster resolution of siting and other environmental disputes. The current shortage of fuels with which to produce electricity tends to obscure the continuing problem utilities are having in gaining necessary approvals for new plant sites, nuclear or otherwise. Literally dozens of agencies have the power to say "no" to a proposed project, but not the authority to say "yes" to a proposed alternative which, in turn, somebody else can say "no" to.

*Tenth*, we need a national research and development program—a joint effort of the utility industry, manufacturers and the government—commensurate with the size of the problem. Especially, we need rapid development of coal gasification. I find it astounding to think that we are as rich in coal as the Arabs in oil, but that we do not yet have environmentally acceptable ways to use the bulk of our coal. We also require rapid development of the breeder reactor, MHD, fusion and, yes, solar power.

#### PLACE OF RESEARCH & DEVELOPMENT

But do not be misled into thinking any of these R & D efforts are going to solve the energy crisis without our first taking over steps such as I have outlined. Not only are we stuck with today's technology for meeting today's needs but it takes 4 years to build a new conventional power plant and 6 years to build a nuclear plant—once the approvals are in hand, and they can take as long as actual construction giving total construction cycle times of a decade or so. The point is that we are building today with today's technology the power plants that will be serving us 4 and 5 and 6 years down the road, and planning with today's technology the plants that will serve us 8, 10 and 12 years ahead. And these plants, once built, are going to be with us for a long time.

All the R & D in the world is not going to give immediate relief to the problems pressing upon us now. But if we don't give R & D the money and attention it deserves, those problems may never go away.

References frequently have been made to a Manhattan Project type approach for solving some of our energy problems. It is worth looking at some of the characteristics that made the Manhattan Project able to perform so speedily and asking how likely it is that any of these can be achieved at this time for energy projects.

1. The Manhattan Project was under the single direction of experienced engineering and construction people.

2. There were essentially no funding problems requiring prolonged top level attention.

3. Complete secrecy meant there was no public and very little administrative review of proposed actions.

4. No environmental impact statement had to be filed and subject to Court review.

5. All personnel from the least skilled laborer to General Groves were working full time under psychological pressures which produced generally high productivity.

6. The project had first call on the best people and companies in the country and overriding priorities in materials and facilities.

7. The project was fundamentally aimed at a single product for one user with no cost ceiling fixed.

This is not to deprecate the tremendous achievements of the Manhattan Project but to point out that if similar conditions are to be obtained on energy projects, a vastly different approach will have to be followed than is now contemplated.

## CONSERVATION

And now I return to the issue of energy conservation. The need is not just conservation of electricity, but conservation of all forms of energy at all seasons. I am proud that our Company was among the first to see the need, but I cannot stand here and honestly offer our Save A Watt program as a model for the nation. It no longer is enough, and even though we are intensifying the Save A Watt campaign, it is dependent on voluntary action, and voluntary action is not enough.

For the record, in its first year, 1971, our Save A Watt program reduced peak demand 200,000 kw on the actual day of system peak and saved about 100,000,000 kwh worth of energy. The next year, 1972, the peak day reduction in demand was 400,000 kw and our customers saved about 300,000,000 kilowatthours. Preliminary analysis suggests that this year's peak day demand was cut 425,000 kw and we estimate energy consumption was about 400,000,000 kwh less than it would have been without Save A Watt. That's equivalent to 850,000 barrels of oil.

At our 4 Irving Place corporate headquarters, we have tried to set an example. I can report that in the first 9 months of 1973 our energy consumption at 4 Irving Place was 15.9 percent below the comparable period of 1970, the pre-Save A Watt base year we use for comparisons. We have cut our lighting levels drastically, and urge others to do the same. We set our air conditioning levels no lower than 75 degrees, and urge others to do the same. This winter our heating level will be no higher than 70, and we urge others to do the same.

Our Company has proposed more severe conservation measures for immediate federal action. These include year-around daylight saving time, an emergency national speed limit, upper limits on heating temperatures in large buildings, restrictions on non-essential lighting, and a standby plan for gasoline rationing that could be put into effect overnight.

More severe—even draconian—measures may be necessary. For example, it might be necessary to ban all display lighting, with violators subject to having their entire electric supply cut off. Or it might be necessary to curtail business hours or ban air conditioning in skyscrapers and in hotels and apartments and office buildings in major cities across the land. Daily voltage reductions might have to be instituted as a fuel-saving device, along with rotating blackouts on a pre-planned basis. California utilities already have filed fuel contingency plans that go so far as rotating short-term blackouts.

Certainly, the war against energy waste will not be won by taking up the cudgel against the electric can opener, or the electric toothbrush, which accounts for 2/1000ths of one percent of our total energy consumption.

Nor will the war against energy waste be won without action against the ubiquitous automobile. Americans have a love affair with their personal cars. Right now, the U.S. has 97 million privately registered passenger cars consuming 75 billion gallons of gasoline, travelling an estimated 1,000 billion miles a year. About 29 percent of the total petroleum supply, or 18 percent of our gross energy supply, goes into these cars. And in most of them you will find a single occupant—the driver.

It is not likely that we Americans can ever be induced to give up the automobile—any more than the people of other countries with rising standards of living can be diverted from their hopes of owning one. But the potential for energy savings here is great, through speed limits, car pools, more use of public transportation, smaller cars and the like.

Some things we'd like to do overnight, we can't—at least not without serious economic consequences. It might be desirable to ban all but compact cars within a year, but in the resultant economic chaos we would lose more than we gained. On the other hand, if we now set a national goal of banning over-powered gas-gulpers within, say, 5 years, I suspect Detroit and the American people could accomplish it.

## GOALS

National goals for energy conservation are important, and they should be set high. The Office of Emergency Preparedness, in a Study of the Potential for Energy Conservation, says that short-term steps—such as educational programs on conservation, a start on improved mass transit, better insulation, replace-

ment of inefficient equipment and new construction that places energy conserving features ahead of first costs—could produce energy savings of about 6 percent a year between now and 1975. Mid-term steps—among them rail subsidies, higher construction standards, and recycling—could produce additional savings of about 9 percent a year by 1980. And long-term steps—mainly through new processes and techniques resulting from research and development—could save another 8 percent per year by 1990. Total savings from all conservation measures, the OEP study says, would then amount to about 24 percent of projected yearly energy consumption, or about one-half presently estimated oil imports in 1990.

A 24 percent savings in projected 1990 energy requirements strikes me as a goal worth striving for, although I refuse to believe that given all the new and current reasons for doing better we cannot do better than 6 percent by 1975.

We in the private sector look to government to set the national goals. If attaining the goals tests our resolve, perhaps it will be good for all of us.

In that regard, I hold with my Company's chairman, Charles F. Luce, who has suggested that "It should become a mark of distinction that an individual consumes less than he can afford—drives a smaller car or uses public transit, lives in a smaller home that he does not overheat in winter or overcool in summer, carefully controls his diet, and otherwise exercises self-restraint in the consumption of material things."

I have an acquaintance who tells me that he must sleep under blankets the year around, summer or winter. He accomplishes this during the hottest weather—by running his air conditioner full blast at its coolest setting while snuggling under his blanket—electric, of course. His is a life style that could do with some amending.

#### CONCLUSION

I have never believed that energy conservation, alone, could solve our energy problems. But considering the fix we're in today, we are going to have to look more to energy conservation now than we did a year ago, or six months ago, or even a few weeks ago.

There are different degrees of conservation, of course. Some of them don't hurt very much. They are the kinds of things we have been doing, and they have helped somewhat. Others may hurt, but that should not deter us—as individuals and as a nation—from taking them.

It won't cost us very much to save. But it certainly is going to cost us a very great deal if we don't.

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#### STATEMENT OF ALEX RADIN, GENERAL MANAGER, AMERICAN PUBLIC POWER ASSOCIATION

My name is Alex Radin. I am general manager of the American Public Power Association, a national trade organization representing more than 1400 municipal and other local publicly owned electric utilities in 48 States, Puerto Rico, the Virgin Islands, Guam and American Samoa. Our offices are located at 2800 Virginia Avenue, N.W., Washington, D.C.

We appreciate the opportunity to testify at these hearings and discuss the views of our organization and our members with respect to the possibility of extending daylight saving time on a year-round basis for the purpose of conserving on energy.

Our Association has no formal position on this subject, but in connection with these hearings we contacted a number of representative member utilities throughout the country to obtain their views on (1) whether or not savings in the use of energy could be obtained by the institution of daylight saving time on a year-round basis, and (2) the extent of such savings, if any.

None of the member utilities which we contacted had made detailed studies of the impact on electrical usage of year-round daylight saving time, and consequently it is difficult to predict the results that would be achieved. However, on the basis of the generalized responses of the utilities which we contacted, we concluded that daylight saving time would be helpful in conserving electrical energy. Although estimates vary on the extent of such savings, it would be our best estimate that daylight saving time would result in savings, for our segment of the industry, within the range of 1 to 2% in kilowatt-hour sales, on a year-round basis.

In 1971, the most recent year for which Federal Power Commission statistics are available, the local publicly owned electric utilities sold about 200 billion kilowatt-hours to ultimate consumers. A 1% savings would have reduced demand by 2 billion kwh; a 2% savings would have reduced demand by 4 billion kwh.

If this potential savings were expressed in terms of equivalent barrels of oil, it would appear that our segment of the industry could save the equivalent of between 3½ and 7 million barrels of oil annually through year-round daylight saving time. This estimate is conservative, because it is based on 1971 consumption; in the intervening period, consumption has probably increased by about 12%. It should be noted that not all of the energy saved would be generated from oil fired facilities, however.

Another factor which tends to make these figures conservative is that they are based on consumption of energy by the ultimate user. However, there are losses, approximating 10%, between the point of generation of electricity and the end user. If such losses and the growth in demand since 1971 are taken into account, it would appear that our segment of the industry could save the equivalent of between 4.3 and 8.6 million of barrels of oil at the point of generation this winter if year-round daylight saving time were in effect.

I would also emphasize that these figures cover only the local publicly owned segment of the electric industry, which accounts for about 13% of total sales to ultimate consumers. If comparable savings were achieved by the privately owned companies and rural electric cooperatives, obviously the savings would be magnified considerably.

It should also be pointed out that the institution of daylight saving time on a year-round basis might have some psychological impact, because it should serve as a reminder to the average consumer of the need for energy conservation.

The survey which we made of some of our member utilities indicated that, although savings in use of energy might be in the range of 1-2%, there would generally be no reduction in peak demand for energy, as a result of daylight saving time. Advancing the clock by one hour would only shift the peak demand to a different hour.

In some cases, member utilities estimated the savings by comparing usage of electricity in recent years in the week preceding and following the change from daylight saving time to standard time. For example, the Shrewsbury, Mass., Municipal Lighting Department found that in 1972 the utility experienced a 9% increase in kwh sales over the previous week in the week following the return to standard time. In 1973 the system had an 8% jump in kwh sales during the similar week. Significantly, in the weeks before the return to standard time, variation from week to week in energy use did not exceed 4%. The utility therefore concluded that, although factors other than the change in time might be present, between 4 and 5% of the additional energy that was used in the weeks immediately following a return to standard time could be attributed to the time change. However, on an annual basis this increased consumption would be reduced by about one-half, since daylight saving time was in effect for about six months.

Although many of our member utilities estimated savings in the range of 1-2%, those in areas, such as the Tennessee Valley, where there is a significant amount of electric heating, felt that the savings would be somewhat less. The reduced impact of daylight saving time would result from the fact that incandescent lights provide a certain amount of heat as well as light, and the savings that might be achieved in reduced lighting requirements would be partially offset by increased heating demands.

As a result of this survey of a sampling of our membership, and because of the demonstrated need for a concerted energy conservation program, we would support legislation instituting daylight saving time on a year-round basis. It has been estimated that lighting represents about 24% of the total demand for electricity, and consequently any steps that can be taken to reduce the demand for lighting should have a significant impact on requirements for electricity. Much of the lighting demand, however, is for commercial purposes, which would not be affected by daylight saving time unless stores were ordered to close earlier.

In conclusion, I would like to emphasize that, although we support the institution of daylight saving time on a year-round basis as a conservation meas-

ure, there is a dearth of detailed information available as to the energy savings that could be achieved by such a step. We would therefore urge that if Congress enacts a law requiring daylight saving time, the Federal Power Commission or other appropriate Government agencies should be directed to monitor the results and to make a detailed study as to the energy savings that could be achieved by daylight saving time, as well as other measures.

The CHAIRMAN. The next two witnesses at the table here are from the TVA. We would be glad to hear from you.

**STATEMENT OF T. GRAHAM WELLS, ASSISTANT MANAGER OF POWER, TENNESSEE VALLEY AUTHORITY; ACCOMPANIED BY DUANE DUNLAP, ASSISTANT GENERAL COUNSEL**

Mr. WELLS. Thank you, Mr. Chairman.

TVA has always been and remains fully committed to the proper use and conservation of the vital natural resources of this country. We support the proposal to extend daylight saving time throughout the year as part of a broad national energy conservation program. Certainly extending daylight saving time could be a beginning step helping to alert the American people to the more extensive measures which must be taken to solve the energy crisis.

While TVA has not made a thorough study of the potential energy savings through extension of daylight saving time, it is our opinion that the direct reduction in total energy use will be relatively small; but in these crucial times, of course, any savings are welcome.

As you know, the President, in his address on November 7, indicated his support for authority to return to daylight saving time on a year-round basis.

The CHAIRMAN. Mr. Dunlap?

Mr. DUNLAP. I am accompanying Mr. Wells. I have no comments.

The CHAIRMAN. Are there questions of the TVA people? If not, we thank you all very much.

Now, the next witness is Mr. Harris.

We are glad to have you here, Mr. Harris. Now, you are with the Rand Corp., is that correct?

**STATEMENT OF WILLIAM R. HARRIS, ATTORNEY, SOCIAL SCIENCE DEPARTMENT, RAND CORPORATION**

Mr. HARRIS. Yes.

The CHAIRMAN. Would you tell us what your position is there?

Mr. HARRIS. My name is William R. Harris. I am an attorney in the Social Science Department of the Rand Corp.

My written statement has been submitted, and at this time I would like to have it entered into the record.

The CHAIRMAN. You made a long, detailed, careful study of this matter, so we will put that in the record in full, and then you can highlight what you have to say.

Mr. HARRIS. Thank you, Mr. Chairman, and members of the committee.

I am appearing before this committee in response to a request of the committee chairman dated October 31, 1973. I appear only in my

personal capacity, and neither my present remarks nor my written statement on daylight saving time and energy should be construed as representing more than my preliminary and personal assessment of some energy consequences of daylight saving time, and the state of knowledge about the consequences of year-round daylight saving time. Nor should these comments be interpreted as reflecting the views of the Rand Corp. or the official opinion or policy of any of its governmental or private research sponsors.

In early October 1973, I undertook two brief inquiries: First, I attempted to locate any previous studies of possible energy savings associated with extended daylight saving time; and second, I reviewed the Uniform Time Act and relevant case-law to ascertain whether the States had authority to remain on daylight saving time in winter without new Federal legislation. When I concluded that the States lacked the present authority to remain on daylight saving time in winter, this subject was no longer one which came within the scope of other research.

The eruption of war in the Middle East on October 6 led me to renew inquiries respecting possible energy savings in year-round daylight saving time, in the belief that even a fractional percentage savings of national fuel requirements, if obtainable, deserved consideration in the context of more wide ranging energy conservation measures.

Without time for systematic modeling, collegial review, and publication, I am not able to provide this committee any single estimate of national fuel savings, nor any range of estimated national fuel savings in which I have substantial confidence.

The analysis which I have undertaken is reviewed in my written statement, "Daylight Savings Time and Energy," which I have submitted for the record, and which I shall now summarize. Neither in this written statement nor at the present time do I take a formal position on the bills, S. 385, S. 1260, S. 2568, and S. 2602, presently before this committee.

My review of the Uniform Time Act and informal queries to state attorney generals' offices led me to the conclusion that even State legislative delegations to State Governors, of emergency powers respecting fuel shortages, did not permit the States to remain on daylight saving time this winter.

I next reviewed studies of electric utility fuel savings resulting from two components: Reductions in electrical energy consumption on a nationwide basis, and reductions in peak electrical loads.

Reductions in peakloads may be important because they could permit use of more efficient generating equipment, resulting in fuel savings greater than proportional to the reduction in kilowatt-hours. I have not been able to estimate the composition, by fuel type, of any resulting electric utility fuel savings. It is my understanding that the New England Regional Commission has recently polled utilities in the Northeast, and has assessed the relative savings of oil, gas, and other utility fuels. But the results of that survey are not yet available to me.

As a test of possible electric production savings, I compared total electric production in the week before and the week after the transi-

tion to d.s.t. in the spring and the transition to standard time in the fall, for 15 transitions between the spring of 1966 and the spring of 1973.

Electrical energy production levels in the d.s.t. weeks were on average 1.10 percent below the levels in adjoining standard time weeks. Fall transitions involved an average change of 1.78 percent and spring transitions an average of 0.51 percent. But these figures are not adjusted for temperature or other variations, nor has any analysis of statistical significance been attempted.

I should add to this summary the fact that my written statement does not incorporate an analysis of the fall 1973 electric production data, which was only available yesterday morning from the Edison Electric Institute in New York. Were these fall 1973 figures included in the 1966 to 1973 averages, the average fall change and the average electric production change for these 16 transitions to and from daylight saving time would have exceeded the averages cited in my written statement.

Assuming high and low values of electric production savings in October to April d.s.t. of 0.9 percent to 1.5 percent, values which bracket the national estimates I have so far encountered, national fuel savings would range from 0.2 to 0.4 percent of October to April national fuel requirements. Electric peakload reductions permitting a shift of only 2 percent of area loads from 0.20 to 0.25 generating efficiency would save about 0.1 percent of wintertime fuel; whereas a shift of 6 percent of area loads from 0.20 to 0.25 generating efficiency and a shift of 4 percent of area loads from 0.22 to 0.33 efficiency could save an additional 0.6 percent of October to April national fuel requirements.

Daylight saving time may also affect fuel use other than for generation of electricity. If daylight saving time resulted in a 3.9 percent savings of heating requirements in the commercial sector, a figure derived from Richard Salter's preliminary computer simulation of selected high-rise commercial buildings, and if heating constitutes about 45 percent of October to April commercial energy demand—figures which are by no means certain—then another 0.3 percent of national October to April fuel requirements might also be saved in year-round daylight saving time.

However, an extra hour of evening daylight might stimulate additional discretionary driving, and added gasoline consumption. cursory examination of such data as I have found suggests that other variables—weather, economic activity, perhaps—may overshadow the effects of d.s.t.

The chart on page 12 of my written statement illustrates this with respect to the relationship between motor gasoline sales and time transitions.

I am unaware of any attempt to analyze this problem. Preliminary data do not suggest increases in motor gasoline sales as high as 3 percent, the level of increase which would offset a 0.6 percent October to April national fuel savings derived from summation of possible savings for the low end of the electrical range, plus the estimated commercial heating savings.

With year-round daylight saving time, it is my judgment that the

Nation could derive a fuel savings of some unknown magnitude. But other factors must be considered, including the inconvenience of later sunrises, the benefits of later sunsets, and the important but unstudied impact of extended daylight saving time upon public acceptance of other energy conservation measures.

Analysis, up to this point, offers little assistance to legislative judgment about the societal as well as the energy impact of year-round daylight saving time.

Senator HART (presiding). Thank you, very much.

As the chairman indicated, your prepared testimony is perhaps the most inclusive of any of the materials that we have available to us. We appreciate very much the efforts that must have gone into the preparation in so short a time.

Mr. HARRIS. Thank you, Senator Hart.

Senator HART. As with most things, I discover, having skimmed through your prepared statement and listened to the last half hour, that what appeared to me to be a very simple question has complications to it that the committee will have to resolve, and I am sure the documentation you have given will help.

You reject in your prepared statement the suggestion that there is any significant relationship, at least as far as available studies go, between daylight saving time and increased use of the automobile; is that right?

Mr. HARRIS. There is no study which has shown any statistical significance between the two. That doesn't mean that a more detailed study would not show such a relationship, but the representatives of the DOT suggested this morning—

Senator HART. You are quite right.

Could you summarize those areas of energy consumption where we might realize fuel savings from year-round daylight time?

Mr. HARRIS. The areas? The first area is in the reduction of electric demand, sometimes referred to as electrical energy in kilowatt-hours.

There seems to have been this morning a general agreement by those who have testified that there would be some reduction in electrical demand. There may be disagreement about the level, the magnitude, but not about the direction.

The second area of possible savings has to do with reductions in electrical peaks, in the peak consumption which for many utilities in the winter is still in the evening, even though in the summer the peak is often in the afternoon.

There is not agreement among those who testified this morning as to whether there would be peak savings. If there are peak savings, those could be translated into use of the more efficient generating units, and therefore in greater fuel savings for the electric utilities than would be obtained just by reductions in the demand for electricity.

My review of the World War II figures and a study done by the Association of Edison Illuminating Cos. in 1946-47, and of the California experience on daylight saving time in 1948, would suggest that at least in that period there have been substantial reductions in peak demand in the evenings, and that the reduction in evening demand has far exceeded the increase in morning demand.

In effect, the peak is between the period of sunset and what is called civil twilight, or thereabouts, in the evening, and a peak also between twilight and sunrise and somewhat later in the morning, and if the past experience holds for the present situation, I would anticipate peak reductions and additional fuel savings.

The third area of possible savings which I mentioned is in the commercial heating centers. There could be a significant, if small, savings in commercial heating demand, and that has been the subject of just preliminary work so far.

There might also be effects in the residential sector as to heating demand; the preliminary calculations which I have seen involve such negligible changes and such uncertainty as to the effects that I wouldn't want to make any statement as to what would happen, that is, with respect to residential heating demand. I haven't seen anything of large magnitude one way or the other so far.

The last effect is the one which was mentioned by earlier witnesses, which is the effect on transportation and especially on discretionary automobile driving, and which could be negative, or could go either way.

I should add that there could well be other effects that haven't been studied. I have just been looking at this subject in the last 6 weeks, and I don't claim to be an expert.

Senator HART. Well, as people go, I am sure you qualify. Is it your conclusion that daylight saving time will yield significant energy savings?

Mr. HARRIS. I am personally optimistic about the energy savings which might well result in daylight saving time, but I am not certain, and I would expect that if the measure were adopted that the only way we would find out would be by undertaking some careful studies.

Senator HART. Senator Long?

Senator LONG. Can you tell me what percent of our energy we are using for transportation?

Mr. HARRIS. The figures which I have seen tend to run between 24 to 25 percent of total national energy demand.

Senator LONG. I see. Can you break that down and tell me what percentage of that is used for gasoline in automobiles?

Mr. HARRIS. Well, that figure is more difficult. I have seen numbers ranging from 11 to 15 percent of total national energy. It is somewhere around half of that transportation energy.

Senator LONG. So, when you go to work to try to save gasoline and save energy by way of carpooling, we will work it on about an 11 percent factor; is that what you are talking about?

Mr. HARRIS. I believe I have seen one figure as high as 15 percent. I am not certain of the numbers, and I wish the representatives of the Department of Transportation were here to answer that question.

Senator LONG. About what percentage is used for heating purposes?

Mr. HARRIS. Heating, I don't off the top of my head have a number for heating. I have seen estimates for heating, the residential, commercial, and industrial sectors. I am not—I don't have those figures in my head.

Senator LONG. I think that when we are looking at this we ought to try to understand both the arguments for as well as the arguments against, and I approach the matter with an open mind.

As I understand, the best argument against daylight saving, is that we are going to be using a lot of measures to try to meet this fuel crisis anyway, and we are going to save a lot more fuel by some of the other methods.

If you were looking at the arguments, and put them on a scale, is that the best argument you would make against the daylight saving time proposal?

Mr. HARRIS. I think the best arguments against it are nonenergy arguments—they have to do with the late sunrises which are known. We know that the country would have the sun rising an hour later by clock time, and that is a substantial inconvenience to some sectors of the country, and the energy arguments against the proposition of going on daylight saving time seem to be less substantial.

Senator LONG. One argument for it is that it would help to make the people aware of the problem and the need to be doing something about it. But we may have to require the use of carpools, and double the cost of electric power to homes. It sounds as if we are going to have plenty of things to remind us that we have an energy crisis. The way it is headed right now, people are getting ready to be cold in the wintertime and hot in the summertime, and there is a prospect of having their fuel use reduced, and speed limits reduced to 50 miles an hour. They have a lot of things that will confront them with the fact that there is an energy crisis, will they not?

Mr. HARRIS. Yes, but daylight saving time, especially a reversion to it, after having gone back to standard time, I think would have a psychological effect, though I know of no study which has attempted to quantify that effect.

Senator LONG. I am just weighing the relative arguments for and against, with all the different things we are going to have to do. I am inclined to wonder whether we are not going to be making people aware of the energy crisis ad nauseum, where they say, "Look, I am sick and tired of being reminded of the energy crisis. I have to drive five people to work; I have to go to work on a bicycle; I have to have a cold house. You don't have to get me up an hour before daybreak to make me aware of an energy crisis."

In other words, if it is just the awareness factor that we are relying upon, I am inclined to think people are going to be too aware the way it is.

Mr. HARRIS. I do not think it is just that factor.

Senator LONG. Usually some people want to blame somebody for this. I think whoever gets blamed in a political sense will not be back here. But what is your feeling about it? Are you strongly in favor, or mildly in favor of this bill?

Mr. HARRIS. I am not taking any position on any of the bills.

Senator LONG. My question is—

Mr. HARRIS. If it were just a question of the psychological impact by itself, I could see why those parts of the country which have extensive agriculture, those parts of the country which should be fairly far north which have the latest sunrise in winter. I could see why if there were not a fuel shortage, and if there were not possible energy savings, I could see opposition.

Senator LONG. Is it your opinion that we operated daylight time because of energy conservation back in World War II?

Mr. HARRIS. The War Production Board did studies in 1943 and a second study in 1945. Those studies asserted some estimated energy savings, and I believe that one of the rationales, if not the only rationale, was energy savings, coal savings in large measure.

Senator LONG. I know back at the time we had a lot of plants operating two and three shifts, operating around the clock, and by moving the daylight hours it gave a little more daylight to people working the night shift.

Thank you for your testimony.

Senator HART. Senator Stevenson?

Senator STEVENSON. Mr. Harris, do you have any way of estimating the percentage of people who would be inconvenienced as compared to the number of people inconvenienced by the daylight saving time?

People in Illinois thought they would have more leisure time.

Mr. HARRIS. I believe a more systematic survey research could be done as part of the general monitoring effort if daylight saving time were instituted, but at the present time, all the people have to go on are polls are surveys, and newspaper responses and the mails which you received, and I agree from what I see there is substantial support for continued daylight saving time.

Senator STEVENSON. Are you familiar with the transportation survey?

Mr. HARRIS. I am familiar with one which was instituted, I believe, by NORC, the National Opinion Research Center for the Department.

Senator STEVENSON. That is what I was referring to. The results indicated by that people are roughly 2 to 1 in favor of this.

Mr. HARRIS. Yes, sir.

Senator STEVENSON. Those that are inconvenienced—wouldn't it be possible to change the school schedules and other schedules to conform to daylight saving time? Is there anything that requires a cow to be milked at 6 o'clock or 6:30?

Mr. HARRIS. I would decline expertise on cows.

The DOT, I think, commented earlier about school hours, about the local option of school boards, that is, to reschedule school hours.

Senator STEVENSON. In addition to impressing on people the need to conserve energy, we are trying to not inconvenience people by saving some energy.

I think Mr. Harris of the Rand Corp. has probably gathered the best primary source of information on this subject in the nation. It is better than any other source I have been able to discover. On the basis of your studies, can you give a high and low range of total national energy savings attributable to year-round daylight saving time? What are the outer limits?

Mr. HARRIS. The outer limits are ones about which I make no claims. What I have done in my written testimony, and what I could say now is that assuming certain minimal expected savings of electric production, of peak reductions and savings in commercial heating, and making assumptions which would be more or less opti-

mistic, I reach the preliminary range estimates from a fraction of 1 percent, on the low side to 1 to 1½ percent of national fuel requirements on the high side.

Senator STEVENSON. You mentioned the possibility of reduced electrical consumption. Senator Long pursued a line of inquiry about the percentages of energy that go into various end uses.

What portion of the total energy consumed in the country goes into the generation of electricity?

Mr. HARRIS. About 25 percent.

Senator STEVENSON. About 25 percent?

Mr. HARRIS. It is a very large segment of the national energy system.

Senator STEVENSON. So, it obviously follows that the conservation of electricity would have an impact on, and would reduce the amount of energy consumed in the generation of the electricity.

Mr. HARRIS. Yes, sir.

Senator STEVENSON. Can you tell us what the increase of the electrical consumption was, if any, after the change back to standard time about 2 weeks ago?

Mr. HARRIS. This last transition? Yes, sir. The numbers were just available yesterday morning from the Edison Electric Institute. I would be happy to make corrections for the record in my written statement so as to incorporate the changes, so as to reflect this last additional period of data, and that data suggests a 2.2-percent increase in the electric production in the week ending November 3, which was the first week of standard time, compared to electric production in the week ending October 27. That is a 2.2-percent increase.

Senator STEVENSON. Can you attribute that to the change to standard time, or were there other factors that might have influenced it?

Mr. HARRIS. There could well have been other factors, one element of which might have been an increase in electrical heating, but where I am living, out in the Southwest, that last week of October was a hot week and we had a lot of air-conditioning, so that might offset it on the other side.

I would not place much emphasis on a 1-year figure by itself, but that is a substantial percentage increase, 2.2 percent.

Senator STEVENSON. That is very substantial. I think it is an indication of the savings that could result if we were now to go back to daylight saving time.

Have you seen similar increases? Electrical consumption following conversion to standard time in other years?

Mr. HARRIS. Yes. The average of the fall transitions in the years 1966 to 1972, or through 1972, inclusive of those 2 years was 1.78 percent. The percentages were 1.7 percent less in the daylight saving time week, in the last daylight saving time week, and the level in the first standard time week.

With the 1973 figure, just in, the average from 1966 through 1973 would go up from the 1.78 figure to 1.83 for that 8-year period.

Senator STEVENSON. I think that is significant. It is more signifi-

cant when it is based on a historical pattern than on an isolated case.

Mr. Chairman, I have no further questions of Mr. Harris. It certainly seems to me, on the basis of all the testimony this morning, that a very strong case has been made for daylight saving time, and that it will save significant quantities of energy. I would hope that we might go very quickly to mark up and report out a bill.

Senator HART. While I think I share Senator Stevenson's feelings, the situation between Michigan and Illinois is rather different, especially the attitude of the citizens.

If you will look at that map over there, the far north section of Michigan has a very strong head of steam against daylight saving. Additionally, the State finds itself at the far western border of the time zone.

We will need all the documentation that we possibly can get to establish the energy savings before we go to the State. We had a referendum about 8 years ago on the question of daylight saving, and there was a dead heat, almost. That is notwithstanding that I share Senator Stevenson's feelings that a case has been made.

Mr. Harris, thank you very much.

Mr. HARRIS. Thank you.

Senator HART. This concludes the hearing today.

We are in recess.

[Whereupon at 12:10 p.m., the hearing was adjourned, to reconvene at 9:30 a.m. on Monday, November 12, 1973]

## DAYLIGHT SAVING TIME

MONDAY, NOVEMBER 12, 1973

U.S. SENATE,  
COMMITTEE ON COMMERCE,  
*Washington, D.C.*

The committee met at 10:35 a.m. in room 5110, Dirksen Senate Office Building, Hon. Adlai E. Stevenson III, presiding.

Senator STEVENSON. The meeting of the Commerce Committee will come to order. This morning, we continue hearings on year-round daylight saving time. Senator Cotton, do you have a statement?

Senator COTTON. Mr. Chairman, I think later in the hearing I would like to make a very brief statement.

Senator STEVENSON. All right, sir. The first witnesses are Mr. D. Kenneth Patton, Administrator, Economic Development Administration, City of New York; Mr. Darrel H. Stearns, Federal Legislative Representative, City of Los Angeles, Calif.; and Mr. Carl Tamaki, Executive Assistant to the General Manager, Department of Water and Power, City of Los Angeles, Calif.

Sir, why don't we begin with you? You have a statement?

**STATEMENT OF A PANEL COMPOSED OF D. KENNETH PATTON, ADMINISTRATOR, ECONOMIC DEVELOPMENT ADMINISTRATION, CITY OF NEW YORK; DARREL H. STEARNS, FEDERAL LEGISLATIVE REPRESENTATIVE, CITY OF LOS ANGELES; AND CARL TAMAKI, EXECUTIVE ASSISTANT TO GENERAL MANAGER, DEPARTMENT OF WATER AND POWER, CITY OF LOS ANGELES, CALIF.**

Mr. PATTON. Yes.

Senator STEVENSON. If you want to summarize it, we will be glad to enter it in the record. Otherwise, you may proceed as you wish.

Mr. PATTON. My name is S. D. K. Patton. I am the economic development administrator of New York City. We are responsible for the general economic health of the city, including those retail and commercial shopping functions that take place within it, and relationships with the growing international economic scene.

We have been concerned and in favor of the retention of daylight saving for a number of years in New York City. Each evening, at dusk, a number of rather significant events occur in all parts of America. First of all, unfortunately, the crime rate goes up. In New York City in the summer months, in July, the peak hours of crime are between 8 and 10 p.m. In the month of December, our police

department reports the peak hours are between 5 and 6 each day at dusk; the accident rate involving automobiles goes up, partly because of increased patronage, but in a differential way.

In the mornings, 8 to 9 a.m., there is an accident rate of 5.7. In the evenings between 5 and 6, because of the dusk hours, the loss of visibility, the dangers to pedestrians crossing streets, et cetera, the equivalent rate is 8.7, a 50-percent increase in automobile accident rates.

At dusk, shopping declines, in spite of the fact that it may be normally a peak hour for shopping activities, there is a measurable decline in the amount of patronage. Each evening at dusk, people shift from foot as a means of transportation to mass transit, which in terms of energy consumption may be minimal, but also from a mass transit to door-to-door transportation by automobiles and taxis, which make a substantial increase in the amount of energy consumed.

Each evening at dusk, there is a tendency toward reduced socialization between people, because each one hurries home to the safety and the lighted home where they can feel more comfortable, and each evening at dusk, regardless of when it occurs, there is a tendency measured by our firms in New York, in particular, for people to want to leave the office as quickly as possible in order to arrive at home as soon as they can.

Now what happens each year in October is that each of these essentially negative events are tuned into the peak hour of travel activity in America, and it is for that reason that there is a substantial negative impact, in suburban areas particularly, due to the onset of daylight saving time, avoidable dusk driving, avoidable travel in darkness, avoidable circumstances on our streets, all are imposed by the fact that daylight savings is somewhat arbitrarily imposed upon our Nation's cities and suburbs.

The impact of year-round daylight saving by contrast would be significant. It would reduce the loss of life on our highways due to a reduction in dusk driving. It would reduce the crime rate on our streets because it would remove the peak street activity from the very moments when crime activity is greatest.

It would increase our shopping activities. It would increase the use of commerce involved in recreational activities. It would increase the time that the American economy has in terms of the European economy by 1 hour each day. In New York City's case, it would increase the availability and accessibility to European markets by 1 hour, from 2 to 3, and with the equivalent effects in other affected time zones.

So we believe that in spite of and in addition to all of those major arguments that relate to our energy crisis where we could make a 50-percent reduction in the predictable gap this year by imposing year-round daylight saving time, there are good and sufficient arguments in terms of crime, safety, and commercial activity, to argue in favor of year-round daylight saving time for this or any other year.

Now, I believe Mr. Stearns has an additional statement.

Mr. STEARNS. Mr. Chairman, and members of the committee, I am Darrel H. Stearns, legislative representative for the city of Los

Angeles, located in Washington. With me is Carl Tamaki, executive assistant to the general manager of the department of water and power. Mr. Tamaki holds a highly responsible position with the department; and has been with them for some years.

This is the largest municipally owned water and power utility in the country. He has come this distance to be able to respond to your questions, particularly with reference to the recommendations of the department relating to the energy crisis, including particularly daylight saving time. I want to say that Mayor Bradley wanted very much to be with you to discuss this subject and planned to for a time, but other responsibilities kept him in Los Angeles.

The Los Angeles City Council supports extension of daylight savings. With your permission, I would like to read both Mayor Bradley's and the city council's statements.

**Resolution:**

Whereas, the Department of Water and Power may not be able to meet all the electrical energy requirements of the city in 1974 as a result of the present shortage of fuels, including natural gas and low sulfur oil, and

Whereas, fuel shortages during periods of high demand for power may result in rolling blackouts or brownouts which would have disruptive and economically damaging effect on the city as a whole, and

Whereas, the City of Los Angeles, through the City Council and Mayor has repeatedly expressed an interest in the conservation of energy, and

Whereas, instituting year around daylight saving time would reduce the demand for electrical energy and would result in the saving of approximately 200,000 barrels per year of fuel oil which would otherwise be needed to generate electricity,

Now, Therefore, be it resolved that, by the adoption of this resolution, the City Council, together with the Mayor call upon the State Legislature and the Congress to take whatever action is necessary to institute year around daylight saving time.

Be it further resolved that the City Clerk be instructed to send certified copies of this resolution to all representatives of the City of Los Angeles in the State Legislature and in the Congress; and that the Chief Legislative Analyst be directed to take steps necessary to demonstrate that the City of Los Angeles urgently seeks to sponsor and/or support legislation to institute year around daylight saving time.

Mayor Bradley says: I have been in favor of year-long daylight saving time for a number of years, for reasons other than the present energy crisis. But with the deepening energy crisis, it has become more of a concern of mine. In the past several months, I have repeatedly asked for the implementation of year around daylight saving time through the enactment of emergency legislation dealing with the subject.

The reason for my concern, to choose one example among many, is that a study undertaken by the Los Angeles Department of Water and Power pointed out there would not be adequate fuel this winter to meet increasing electrical power demands, and that we would have to take drastic measures to curtail energy consumption.

Therefore, daylight saving time is one of the most convenient, and perhaps one of the simplest ways of helping this situation. Daylight saving time on a year-round basis will save the department of water and power of the city of Los Angeles 200,000 barrels of oil annually and the Southern California Edison Co. estimates it will save 500,000 barrels per year through daylight saving time.

But we all know that daylight saving time is only one step toward meeting the crucial energy situation. Thus the department of water and power has held hearings to consider a program of voluntary and mandatory energy curtailment actions for Los Angeles.

The city, through its department of water and power, is presently taking measures to help conserve energy.

When the department recognizes that there are only 180 days left before fuel runs out, it will institute a prescribed voluntary energy curtailment program, essentially an augmentation of the present conservation program.

This will involve reducing all lighting, reprogramming air-conditioning and heating controls by lowering thermostats in winter and raising them in summer, using only one TV in the house, eliminating all decorative outside lighting, using only small appliances, removing lamps from corridors and hallways, and reducing cleaning crews to one floor at a time.

If the department reaches 120 days' supply of fuel, mandatory controls will be ordered through ordinances prohibiting all unnecessary use of electricity. Basically those suggestions which were placed on a voluntary basis will become mandatory.

Evidence obtained recently not only by the department of water and power, but by private utilities such as Southern California Edison, indicates that large department stores and office buildings have been able to reduce their energy consumption by more than 10 percent by utilizing a combination of measures such as restricting or eliminating outside floodlights, reducing interior lighting levels, reducing the number of hours of air-conditioning to a minimum, resetting thermostats, et cetera.

Other stringent proposals include no outdoor night sporting events or other night outdoor activities; highway lighting reduced by half; commercial establishments closed at night and all manufacturing and industrial processes to be limited.

Eventually, if the situation worsens further, the city must go to constant selective blackouts wherein circuits will be blacked out for a couple of hours on a rotating basis in each section of the city.

Let me turn to one of the most important aspects of the energy crisis. I believe that if it becomes necessary to burn high sulfur fuel, which was outlawed in the south coast air basin in 1969, then all reasonable steps must be taken to protect the public from overpolluted air.

On the other hand, I recognize that rotating blackouts and curtailment of essential uses of electricity will have an even greater adverse effect on the health, safety and economic well-being of the public.

Thus it is conceivable that energy measures such as selective blackouts could be avoided or minimized by the following strategy:

Mandatory curtailment along the lines outlined above.

Voluntary curtailment along the lines outlined above.

Variances granted.

High priority on low sulfur allocations for powerplants in the south coast air basin.

Of course the re-establishment of daylight saving time can be and will be an integral and important part of this mixed strategy and I urge adoption of such a measure by Congress. I have been asked by the Los Angeles City Council and countless other city officials in California to add their plea for such action.

The following mayors specifically asked that their names be included: Mayor John Byork, Lynwood; Mayor Don R. Sawyer, South Gate; Mayor Arthur Gerdes, Norwalk; Mayor Thomas H. Morton, Downey; Mayor Joseph Miller, Hawthorne; Mayor Merle Mergell, Inglewood; Mayor E. L. Balmer, El Segundo; and Mayor Louis Spane, Paramount.

Most impressive to me, however, is the level of understanding of our public that prompt and specific action is demanded by the energy crisis. Several hundred Angelenos wrote to me to express their support for year-round daylight saving time after a radio report that I had proposed such a step. Mr. Hilly Rose of Radio KFI reports that the letters are still coming in. Some representative comments were:

1. I urge a local vote for all citizens to express their views now. Keep on mail list for all news releases, happenings, for office. M. Penn.

2. We hear from friends outside Los Angeles in the rural areas "We live in Mono County on the eastern slope of the Sierras and have to depend on propane gas for our lighting, heating, and other needs. If daylight savings time can be made an all year-round effect, it will be a great help. Please do what you can. Thank you. C. Dobriver—LeeVining, Calif."

3. I would like to see daylight saving time year-round, even two hours. Mrs. Marion Orr.

4. I would like to urge you to try and keep daylight saving time the year around. We need the light at getting off work time. Mrs. James F. Gossage.

5. This is to tell you how strongly I support your effort to have daylight saving time in effect the year around in California. Lois Vinette.

6. I'm in favor of all year daylight saving time and double daylight saving time where it would be useful. Sidney Magnes.

7. We want and need daylight saving time for the current obvious reasons. Cast 11 votes for D. G. Davis, and others.

In conclusion, let me state that it is important that Congress take all reasonable actions necessary to meet this Nation's energy crisis. This must include support for mass transit; including adequate financial support and adequate fuel supplies. The congress must support and complement good faith efforts on the part of local and State government, including those outlined above, to meet this crisis in a positive fashion. Thus it is imperative that the integrity of the Clean Air Act be maintained. Any changes or modifications must be

carefully considered and kept to a minimum. Considerable effort must be made to strengthen the integrity of the act, not weaken it.

Your task is important to the environmental, economic, and social well-being of this country. I stand ready to assist you in any way in carrying out this task.

Thank you.

Senator STEVENSON. Thank you, Mr. Stearns.

Mr. Tamaki, do you have anything to add?

Mr. TAMAKI. Mr. Stevenson, I am here to answer questions that may come from your committee, and I have no statement of my own. Thank you.

Senator STEVENSON. Gentlemen, the testimony so far in these hearings indicates that very few people will be inconvenienced by daylight saving time, but what individuals, what groups, what economic interests, in New York and Los Angeles, would be inconvenienced by daylight saving time year around?

Mr. PATTON. I can think of virtually none, Senator. On the way down this morning I tried to in my mind consider any group of workers in our region who would find themselves inconvenienced, and the sole exceptions might be under a staggered work hour period of time.

We have a number of Far Eastern firms that keep strange hours down at our World Trade Center to achieve a time window with Far Eastern time zones. That is about the only instance, I think, where commercial and economic interests would be disadvantaged.

Senator STEVENSON. On that one point as a result of daylight saving time, I understand that about three-fourths of the Nation would have overlapping business hours with European business hours.

Is that an economic advantage to daylight saving time that would be significant in New York?

Mr. PATTON. I think increasingly, yes, sir. The issue of the growth of U.S. markets for commodities, stocks and bonds, and financial activities in comparison with those of the growing Common Market interests—I think are very important with multinationalization of business.

We sense in New York, and you must in Chicago, a resurgence of our position in this regard, and I think the additional hour would be of great benefit, coming particularly as it does at the close of the day.

Senator STEVENSON. Yes.

Mr. PATTON. The European day, that is. The advantage to business in New York, always, of course, is to be able to place orders at the close of the day through their local activities, and in disproportionate degree to those early morning activities.

Senator STEVENSON. We have received expressions of concern about schoolchildren going to school in darkness in various parts of the country. I think the problem is probably more acute in the New York areas. Do you know of any reason why, to minimize the

impact of daylight saving time on parents and children's school schedules, school schedules couldn't be adjusted? Is that something that should be considered in Los Angeles and in New York.

Mr. TAMAKI. It occurs to me, Mr. Chairman, that the vast majority of the people in southern California support daylight saving time. I think we have universal support of the television, radio and the newspapers, most of the mayors, and I have here a package of petitions and letters to Mayor Tom Bradley all in support of daylight saving time.

I believe that if there are those who are inconvenienced, and apparently in southern California it is a very small minority, that these people may be able to shift their time back to whatever they desire.

I think the vast majority will gain by daylight saving time, and certainly in the face of our energy situation, the department of water and power strongly urges national daylight saving time.

Mr. PATTON. In New York City the situation is the opposite. Our schools start generally between 8:30 and 9 and there is never a period in which the morning's darkness is a factor, and that is true in general of our entire metropolitan region of some 25 million people.

However, we do have a problem for after school activities. The onset of darkness tends to truncate extracurricular activities, which, in our opinion today, are of equal importance with any classroom activity in terms of problems of youth and the problems of organizing young people into constructive activity.

It is precisely the moment in the day when most mischief is gotten into. Our ability to keep them in some organized activities is very important. Since we have many children on double sessions, the time of darkness in the evening is terribly important to most parents.

Senator COOK. Would the chairman yield at that point?

Senator STEVENSON. Senator Cook.

Senator COOK. I think the Chairman's example of children going to school, particularly in the North, is really not the case at all. The real problem is with those areas, Mr. Chairman, those areas that are in the extreme western edges of a time zone. I don't think the situation would be affected at all along the eastern coast of the United States.

The area in the Eastern time zone which is affected is some 700 miles removed from the east coast of the United States on the extreme western edge of the time zone.

The Senator from Illinois happens to have the best of both worlds. He is in the Central time zone and he is in the extreme eastern edge of the Central time zone. For instance, it is light here at 7:15. In Louisville, it is very dark at 7:15, because it is 700 miles to the West. This is where the problem really is, and this is where you really do have serious problems in relation to transportation of children between 7 and 8 o'clock in the morning going to school when for that first 15 or 20 minutes it is either dark or it is in the first shades of daylight. So I

would not think that there would be any similar problem with school-children along the eastern coast. The problem we really face presents itself in the extreme western edges of time zones, when you really do not have sunrise until well after 7 o'clock.

As you well know, there are literally thousands of small radio stations in the United States whose only authority is to go on the air from sunrise to sunset, and they are a tremendous link to the American people in the early hours of the morning. Weather reports and many other absolutely necessary functions, are performed by them. I think when we are debating this bill, and I don't really wish to prolong it, but I think we have to find a means to adjust the regulations of the Federal Communications Commission, even the time zones, and maybe reestablish the options that, as the chairman well knows, the States presently have to exempt themselves from daylight saving time.

So I think we are talking about several problems. I can't, however, see major problems in New York City, being, fortunately for them, in the eastern edge of the eastern time zone, and I think you would agree with that.

Mr. PATTON. Yes, sir. Our problems are completely the opposite. Being on the eastern edge, it is the deadline of dusk.

Senator Cook. You have your problem in the evening.

Mr. PATTON. It reduces business, and reduces people sitting out talking together, and puts people in taxicabs, as it does in Washington, and moves them off pedestrian ways and mass transit. It burdens our systems while cutting down our revenues, and makes clock-watchers out of every employee in New York.

When it starts to get dark, many of them have a long way to go.

Senator Cook. What you are really saying is that your problem is in the evening, whereas in the extreme western edges of the time zones, their problems are in the morning.

Mr. PATTON. Yes. I went to bed last night, I got out the Encyclopaedia Britannica, when it comes to matters English, and brief on matters America. So I had a lot on the Greenwich Observatory. Of course, that is where it all started. It started in Greenwich, England, which is, of course, a suburb of London.

It established a standard for the world based upon a very northern latitude, the place where the daily sunlight and sunset arrangements are quite different than anything in this country.

So the problems of Kentucky, the problems of New York, all come from the peculiarity of the Royal Observatory being in Greenwich, England, and I think it is fair for all of us to reconsider what has become of us in terms of the modern needs of cities and the particular problems on those western edges of our time zones, which

work to give us the penalty in the morning that we are seeking to gain an advantage in the evening.

Senator COOK. Yes.

Senator STEVENSON. Senator Cotton, do you have any questions?

Senator COTTON. No. I will withhold my questions for the time being.

Senator STEVENSON. Senator Cook referred to the matter of the daytime radio stations. The committee has been in contact with the Federal Communications Commission. It is our hope that some of the problems of the stations might be resolved administratively. As Senator Cook mentioned, many children do face undeniable problems getting up and going to school in darkness. But can't a school district simply adjust its schedules to accommodate parents and children? I don't know why that can't be done.

Senator COOK. May I say, Mr. Chairman, that in some of the schools in metropolitan areas of the United States, there is a serious shortage of classrooms still, although I think that will ultimately work itself out. But we have a number of schools in our area that are on double schedules, and I am not quite sure how you can work that out with this time problem.

I think you face the problem of children going to school in the dark and the second group obviously coming home in the dark. I am not really sure what you do within the parameters of this bill, and I wouldn't even try to pose it as a serious problem, because we are going to have real problems with it one way or the other, but I would suggest that we do have that problem in many school districts throughout the United States of being on what we refer to as double sessions.

Senator STEVENSON. Mr. Patton, what, if any, effect will daylight saving time have on crime rates in New York? Is there any way of predicting the result?

Mr. PATTON. I have asked, and I will be happy to send, as soon as it is received, for a measure of this year's 2-week-before and 2-week-after experience in New York City.

[The following information was subsequently received for the record:]

**NEW YORK ECONOMIC DEVELOPMENT ADMINISTRATION,  
New York, N.Y., November 23, 1973.**

HON. WARREN G. MAGNUSON,  
Chairman,  
Senate Committee on Commerce,  
Senate Office Building,  
Washington, D.C.

DEAR SENATOR MAGNUSON: In accordance with a statement I made before the Senate Committee on Commerce on November 12th, I am sending this letter as an expression of my testimony before that committee.

In the face of an impending fuel shortage over the coming months and years, it is clear that an hour's daylight is a resource we can hardly afford to squander. When he submitted S.2602 to the Senate on October 28rd, Adlai E. Stevenson III of Illinois cited a soon-to-be-released study by the Rand Corporation that estimates this nation could reduce its energy shortfall by almost

50% by extending daylight savings time throughout the year. In my capacity as New York City's Economic Development Administrator, I have a special, official concern with the issues and circumstances involved in this proposed extension.

The economic effects of making daylight savings a year-round practice would be nothing less than profound. Cities on the eastern seaboard would share a three, rather than two hour overlap in the working day with the business capitals of western Europe. Because national investment decisions are so dependent on an intimate, timely knowledge of international commerce, American business in general would inevitably benefit from an additional hour's daily contact with Europe.

An attached graph, based on statistics compiled by the Crime Analysis Division of the New York City Police Department, illustrates the relationship between daylight and street crime. During the two months of the year noted on this graph, the incidence of street crime increases dramatically as darkness falls. In December, street crime (forcible rape, robbery, felonious assault, murder and manslaughter) peaks between 6 and 7 P.M., whereas in July, the corresponding peak hour is between 10 and 11 P.M.

The heightened public-awareness of this trend indicates some compelling consequences that might be expected if a year-round extension is ratified. Retail prosperity would certainly be promoted by such a policy. The fact that daylight instills a sense of personal safety in shoppers is generally reflected in sales figures. During the period preceding Christmas, another hour of daylight could be a positive factor in registering record national retail profits.

A confident state of mind with respect to personal safety may also have a beneficial effect on productivity. Employees edging toward the door to leave work at the earliest possible moment so that they can be home before dark will not have so strong an incentive to depart promptly if daylight offers an additional margin of safety for a somewhat later commute. This argument on behalf of a daylight savings extension is particularly relevant in the cases of women and older employees.

A host of businesses across this nation are patronized, for one reason or another, solely when daylight is present. The leisure industry, a dynamic growth sector in our currently haphazard economy, prospers while the sun shines. Ski resorts, golf courses and other such facilities from which Americans derive wages or healthy exercise would provide a double-edged dividend from an extra hour of daylight.

The present bi-annual adjustment of clocks costs both time and money. An extension of daylight savings would eliminate the confusion and expense caused by the change of communications and transportation schedules.

Auto safety can surely be improved by an extension of daylight. Commutation by car would take place prior to dusk (the most dangerous time to drive) in all but one month of the year. Motorists would be spared from three months of driving at twilight when the peak accident rate per mile coincides with the traffic peak.

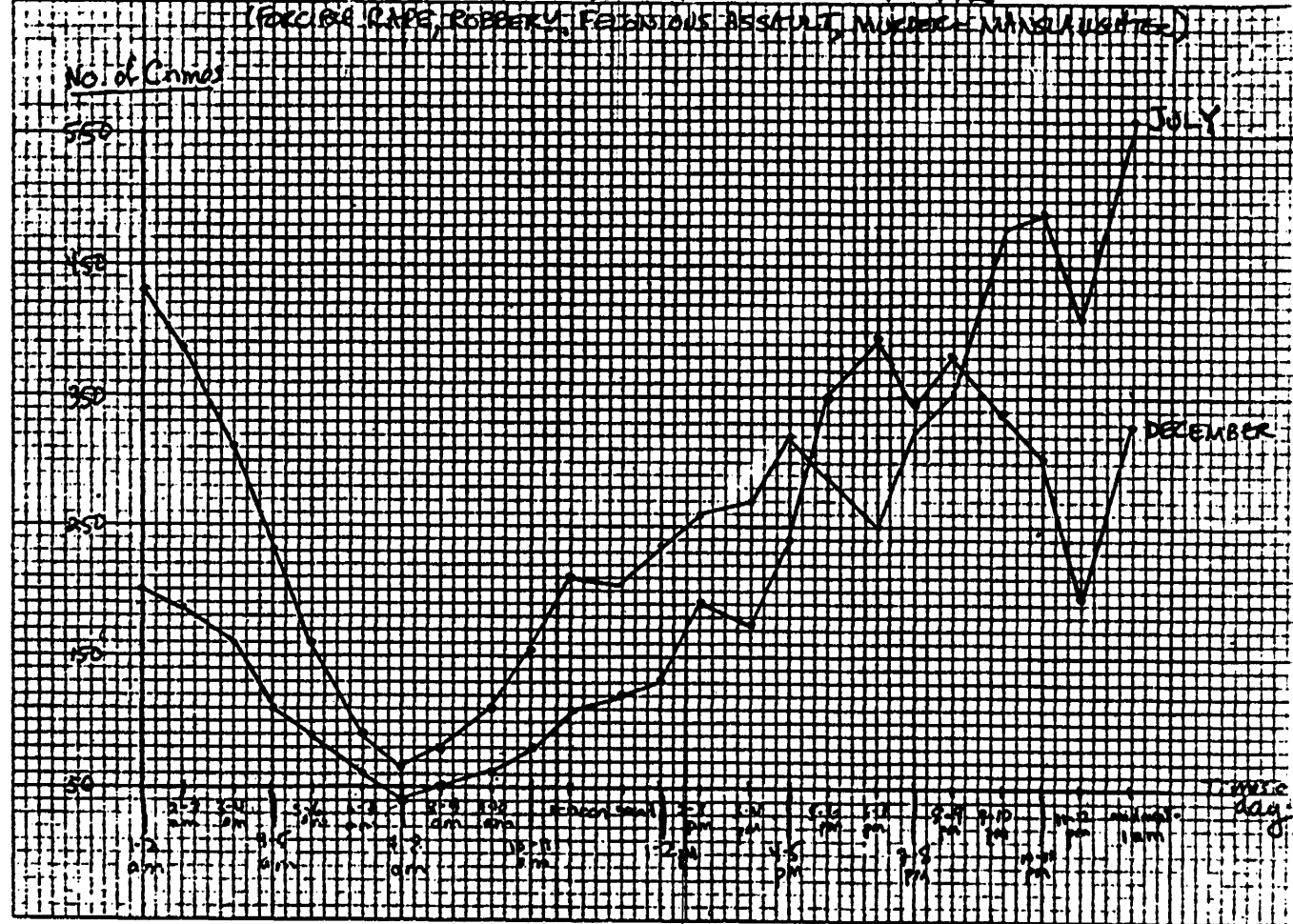
Even before America confronted its contemporary energy crisis, I believe the case I've made for an extension of daylight was valid. Considering this approaching dilemma, our leeway for temporizing is gone. Common sense and circumstances now compel us to make this extension the law of the land.

Yours truly,

D. K. PATTON, *Administrator.*

# INCIDENCE OF CRIMES COMMITTED OUTSIDE - NEW YORK CITY 1972

(FORCIBLE RAPE, ROBBERY, FELONY ASSAULT, MURDER - MANSLAUGHTER)



Mr. PATTON. As I mentioned in my initial statement, of course, it is obvious that maximum crime rates occur at dusk in the hours immediately before and immediately after darkness, regardless of the season of the year. So that in the month of July, our peak crime rates in New York City are from 8 to 10 p.m. in the month of December and the month of January, it is between 5 and 6 p.m. Now the propensity for crime at dusk, then, combines with the fact that 4 million people in New York City are on the streets in one form or the other going home from work.

So we have had a multiplication of exposure to the peak crime rate hours due to the daylight—due to the removal of daylight saving time. I am sure the amount of crime due to this exposure factor must be up enormously, and we will try to deseasonalize that data and come up with figures that give you a measurement. But it is clear at the very outset that 4 million people going home from work provides for a larger target for criminals than does the fact that at dusk in July very few people are in the process of commutation.

We are finding in New York City and I am sure you are in Washington as well, a great deal of pressure from employees of companies to leave work early, and the companies in New York are universal in their support of year-round daylight saving because of this.

Senator STEVENSON. We would be glad to have the results of any studies that you have.

Mr. TAMAKI. I would like to add a point to this. In the department of water and power—we have 50 field servicemen whose duty it is to turn on and turn off meters. They signed a petition recently and asked since we have gone back to standard time that they be allowed to make their last call at 4:30 p.m. because they have suffered a great deal of problems. There have been various incidents such as bodily attacks, dog bites—a robbery or two. There was a man shot, and these events usually occurred immediately after dark.

So we do have this indirect demand from our field service people.

Mr. PATTON. I think there is another factor. We have, the mayor and myself, in cooperation with a number of shopping areas and critical areas of New York City—we have invested over \$50 million in high-intensity improved streetlights. That is our own cash commitment to the fact that light is a major factor in the safety of people, their willingness to shop, their willingness to walk the streets in the city.

Now it is bizarre that in the face of the energy crisis we should be doing away with natural light at the critical hours when the city has been forced to spend the money and move in the direction of improved street lighting, as has virtually every city in the country, I am sure, to deal with the problem of darkness on the streets.

So our police find that these lights are particularly useful in their enforcement efforts. So I think when our final data comes in, you will find the effect of the daylight and improved street lighting on crime is quite pronounced.

Senator STEVENSON. The National Safety Council has submitted some statistics which indicate that the rate of traffic fatalities in the

evening is roughly twice the rate as in early morning darkness. Do you expect lower rates of traffic accidents as a result of daylight saving time in Los Angeles and in New York?

Mr. PATTON. Well, we have examined those data and find that there is a nearly twofold increase nationally, and our experience locally is the same. With the more serious problem in some respects—New York area is highly involved with pedestrians, and there are accidents involving pedestrians and automobiles, probably more so than in most other parts of the country. So the hours of darkness are a particularly dangerous time for people on foot crossing streets, and so we will probably have the same experience, only more so, because of the pedestrian factor.

Senator STEVENSON. Mr. Tamaki, does California Edison endorse your proposal?

Mr. TAMAKI. Yes. They have announced they will save 550,000 barrels of fuel oil each year, and they are in support of daylight saving time, as well as the San Diego Gas & Electric Co. I believe Pacific Gas & Electric is also, but I am not sure. I haven't seen their statement.

Senator STEVENSON. Gentlemen, unless the other members of the committee have any further questions, I think we had better move on. Your testimony has been very helpful. Thank you very much.

Mr. TAMAKI. Thank you very much for this opportunity.

Mr. PATTON. Thank you.

Senator STEVENSON. The next witness is Mr. Bradley Koch, staff engineer, National Rural Electric Cooperative Association.

**STATEMENT OF BRADLEY KOCH, STAFF ENGINEER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION; ACCOMPANIED BY WALLY RUSTAD, LEGISLATIVE REPRESENTATIVE**

Mr. KOCH. My name is Bradley Koch, and I am a staff engineer with NRECA. I am accompanied by Wally Rustad, our legislative representative.

NRECA is the national organization of nearly 1,000 nonprofit cooperatives which deliver central station electricity to over 20 million people in 2,600 of this Nation's 3,100 counties. These distribution electric utility systems serve in 46 States, primarily in the agricultural and rural residential areas.

We appreciate the opportunity to express our views on the proposed extension of daylight saving time into the coming winter season.

**ENERGY SITUATION**

Like many other energy-related organizations, we have long been concerned over the growing energy bind in which this country is becoming enmeshed. Energy demand in the United States is doubling about every 14 years, and the consumptive patterns we have been following have seriously taxed our ability to produce fuel, from domestic resources, sufficient to meet demands.

Consequently, the United States has begun to depend on foreign sources to fill the void created by our inability to maintain an ade-

quate production pace. We currently import about one-third of our petroleum products. Projections based on current trends indicate that by 1980 crude oil consumption will increase some 50 percent with half of the total supplied by imports.

This committee is well aware of the inherent dangers should that trend continue.

Until recently, we were concerned that the general public was not fully aware of the implications of that growing foreign dependence in spite of repeated alerting efforts. Perhaps complacency existed because the ill effects of an energy pinch seemed always off in the future, thus diminishing an immediate sense of urgency.

It is unfortunate that the catalyst for setting needed national energy policies into motion was a small war in the Middle East which strained foreign relations to the point of retaliation.

Hopefully, however, that catalytic action was timely enough to avoid a future disaster of major proportions. The Arab embargo on oil destined for the United States occurs at a time when our dependence on Mideast oil measures about 20 percent of all oil imports and about 61½ percent of our total demand. Should we continue in our present consumptive pattern, projections clearly indicate over 80 percent of the 1980 imports, or 40 percent of total demand, as coming from the Eastern Hemisphere. It would appear that the longer we pursue our established energy policies, the more we court disaster.

#### RURAL REACTION

These hearings have been called because year-round daylight saving time has been suggested as an energy conservation technique. Its potential, however, is speculative, but, we feel, deserving of consideration.

Historically, daylight saving time has always been more popular in urban than in rural areas. This is because daylight saving time gives city dwellers a welcome extra hour of daylight at the close of their work day. On the other hand, farmers regard daylight saving as a disruption of their "sunrise to sunset" working day.

As one farmer put it, "You can legislate daylight saving time until you are blue in the face, but the dew is still going to dry off the fields on standard time."

In other words, despite our advancing technology, Mother Nature still does a lot of things on her own schedule; and farmers, in many instances, have no choice but to follow that schedule in their farming operations. What happens, in effect, is that farmers are running at least part of their business operation on standard time while the rest of their world is on daylight time.

For example, business establishments will be closing one hour earlier. This creates hardships for farmers who normally work during the daylight hours, and visit, shop or seek entertainment in the late afternoon. Also, there is concern over the added danger to children who would be leaving for school before sunrise. Dairy farmers have found the time change especially disruptive as they must adjust to new delivery schedules for their urban customers.

Furthermore, there is little evidence to suggest that much, if any,

energy conservation will be achieved in rural America through year-round daylight saving time.

In reviewing the winter peaking periods of our electric generating systems, it is evident that rural electric service peaks at about the same hour, 7 p.m. standard time. This is as true in the far North as it is in the deep South. The only effect daylight saving time appears to have is to move that peak to 8 p.m. on the books of record.

There are, of course, exceptions to the rule. In the dairy State of Wisconsin, for instance, the erappears to be a coincidence of the two major load sources—milking and lighting—immediately following the October return to standard time. This generally results in the electric utilities' daily peak high for the year. Ostensibly, under a year-round daylight saving time program, that peak would be lowered, and a net savings in electric capacity realized. In general, however, we were unable to detect any variation in the daily consumption pattern of rural electricity as a result of time change.

#### URBAN POTENTIAL

It would appear that if major energy conservation through daylight saving time is to be achieved, it will be in the highly urbanized industrial and business centers of the large cities. Recent work done at the Rand Corp. has apparently indicated electric consumption across the country could be curtailed by as much as 2 percent if daylight saving time was in effect this winter. Consolidated Edison of New York, based on a study of its own system, has projected a possible 3 to 5-billion-kilowatt-hour reduction in consumption for the Nation should there be no return to standard time. These two studies reflect a net savings in crude oil equivalent of somewhere between 150,000 and 450,000 barrels a day.

With shortages anticipated to be 2-3 million barrels a day, these studies indicate that daylight saving time could contribute materially toward mitigating the impact of energy shortages this winter. To further support the theory of energy savings in the larger urban centers, we are told that some of the investor-owned members of KIPP, a power pool of Kentucky and Indiana electric utilities net an energy savings of approximately 1 percent during periods of daylight saving time.

These indications of major potential savings in total energy, we feel, are sufficient to warrant our support for implementing, on a trial basis, a wintertime daylight saving plan. In spite of the inconveniences that would have to be encountered, some of which have been previously stated, we feel the potential is sufficient also to merit the support of our farmer members.

Farmers, as a group, have always responded well to emergency measures undertaken in times of crisis, even if the particular emergency measure was not to their liking. For instance, they accepted year-round daylight saving time as a temporary emergency measure during World War II.

#### ONE-YEAR STUDY

Because power loads and, more important, patterns of power usage in rural areas have changed so dramatically since that time, it

is not realistic to use the World War II experience as the basis for projecting possible energy savings from year-round daylight saving time in 1974. For that reason, we urge that this committee adopt legislation temporarily establishing year-round daylight saving time.

In addition, we respectfully request that a study provision be included in the bill. That study should involve the collection of sufficient data to evaluate the net effect of daylight saving time as an energy-conservation technique. The results of that study would then determine the merit of continuing the program on a more permanent basis or abandonment if shown to be ineffective.

The study would be a valuable tool in evaluating the total future energy picture. It has the added advantage of informing those who are asked to endure further that their inconvenience is not speculative, but contributes measurably to the general good.

We commend this committee for the sense of urgency with which it is responding to the current energy crisis. It is encouraging to note that the legislative process has the potential for a quick response when the Nation's interests are threatened. We thank the committee for allowing us time to present our views. This concludes our statement.

Senator STEVENSON. Thank you, Mr. Koch. Has the National Rural Electric Cooperative Association opposed daylight saving time in the past?

Mr. KOCH. As an association, I am not sure we ever took an absolute position. Our farm members, have, of course, opposed it in the past, but the association does not, at the present time, have any resolutions at all on daylight saving time.

Senator STEVENSON. In my own State the farmers, as a whole, support daylight saving time, in spite of some of the inconveniences to which you alluded. They, more than most groups, are threatened by the energy shortage and are willing to suffer some inconvenience in order to save energy on which they are very dependent.

Senator Cotton?

Senator CORRON. Like the distinguished chairman, I, too, have found that the attitudes of the rural people and the farmers in my own State have changed substantially in the matter of daylight saving time.

I had a lot to do with framing the Uniform Time Act of 1966, along with the Senator from Wyoming, Mr. McGee. We had a long, hard fight for two Congresses trying to bring some order out of chaos in the matter of daylight saving time, in contradistinction to standard time.

At that time, we faced a great deal of opposition. We therefore didn't advocate daylight saving time all the year-round.

The only way that we succeeded in getting the bill through was to permit each State to exempt itself by law from daylight saving time during the statutory period of observance. The only thing we accomplished was to provide that the observance of daylight saving time would start uniformly on the same date and end on the same date. At that time, some 15 States started on the last Sunday in April, some others, at other times.

Even the 15 States that started daylight saving time on the 15th of April did not end it on the same date. It was "clock madness".

Parts of States would be on daylight saving time, and the other part of the same State would not be.

It was costing untold millions of dollars for the buslines, the airlines and the railroads, in juggling their schedules to conform. Also, a great deal of time was lost by individuals. In one State, one city could be on daylight saving time, the next, on standard time.

We faced a great deal of opposition, requiring 4 years just to take that one step to obtain some uniformity. We had the added problem that some states wanted the privilege of observing split time zones—part of the State on daylight and part on standard.

At that time, much of our opposition came from farmers in rural areas. Today, however, the situation has changed greatly. I find, for example, that my State, which is largely rural, with many people engaged in agriculture, now views with favor going on daylight saving time.

There is one other aspect I would like to cover. My State happens to be perhaps second only to Florida in the number of elderly people. These people do not work except perhaps at some part-time occupations. They generally aren't going to be on the streets in the morning before daylight. They are becoming what I might call "night lifers."

They get up late in the morning, and they watch television throughout most of the evening, including the late show. The result is that some lights of elderly people living at home are burning far, far into the night. I don't know whether one could estimate how much energy could be saved if we moved to daylight time so that the television programs advanced and ended somewhat earlier. I daresay that it might be a substantial saving.

As for my observations about rural areas, I mention that I would like to have your comments on whether you find that in districts you serve there is a lessening of the opposition.

Mr. KOCH. Yes, sir, Senator Cotton, and Senator Stevenson. I agree with both of you. There has been a change in the attitude of the rural people as far as daylight saving time is concerned. It stems from possibly a number of factors, but the main one, I think, might be the movement of people, within the rural system, off the farm and into residential areas, thus they are no longer committed to the rigors of farm work.

I would say, even the massive resistance that the farmers themselves had is somewhat abated, and a lot of their argument is emotional, but, as I said in my testimony, the crisis is here, and they are certainly willing to suffer—it is my impression that they would be willing to suffer—whatever inconvenience might be incurred as a result of daylight saving time.

So I don't think we are going to find massive opposition to it. We haven't sampled many of our farm members. I presumed that the committee would look to some of the farm organizations for an input from the farmers. But I really do not anticipate, on the small sampling that we did do, any massive opposition. The gut reaction I have gotten from the people I have talked to is, "I don't like it, but I will go along with it."

Senator CORRON. One other question, Mr. Koch, concerning page 5

of your written statement. You say that you urge this Committee to develop legislation to establish temporarily daylight saving time, and to request a study to be included in the bill.

It has been my thought, based upon 4 years of travail over this problem earlier, that whether the Congress specified the observance of daylight saving time for a temporary period, or whether it authorized the President to invoke daylight saving time throughout the Nation during the energy crisis, we should not give up our permanent legislation. In other words, at the end of any emergency period, we would return to the Uniform Time Act of 1966 and avoid possible chaos while we studied what to do.

It seems to me that the Uniform Time Act of 1966 should remain on the books, with a possible addition of permitting States to have daylight saving time all the year-round if they desire. It has to be Federal action. But, while the study might be helpful, we don't want to get ourselves in a position of having a 2-year temporary period, for instance, of enforced national daylight saving time terminate with a return to the chaos we had before.

What is your comment on that?

Mr. KOCH. Well, sir, I put the "temporary" measure on that strictly for the study. If people are suffering an inconvenience and we find through the study that there is no material gain or savings in energy, or in capacity, then it would seem fruitless for them, or fruitless to ask them to continue to be inconvenienced.

If, on the other hand the study would show, as some of these other studies indicate, that material savings could be gained through a more permanent daylight saving plan, then I think that it would be difficult, to fight any sort of permanence. My only comment on the temporary is that I think we ought to have a study and we ought to know whether we are going to have material savings in energy, otherwise I think we are unjustly asking some of our farm friends to suffer an inconvenience.

Senator CORTON. The permanent legislation would simply be the present law, which gives the States the option to exempt themselves by law from the observance of daylight saving time, with the possible addition of providing the States the further option of observing year-round daylight saving time.

In other words, when we come to the end of the crisis, if it were left to Congress to act on the results of a study, since Congress is sometimes slow in acting, we might lose our present uniformity, since as Senator McGee and I have found, it is a very, very controversial subject. Remember, it took us 4 years to get any action to create some order out of chaos before. Therefore, there should be some statute on the books that—in the absence of new legislation after the crisis is over—we will return to, until such time as it is amended.

I just don't want us to run into the situation of having to fight the battle all over again in Congress, and in the meanwhile have all the States going every which way, at the end of the energy crisis.

Am I making myself clear?

Mr. KOCH. Yes, sir, you are making yourself perfectly clear. I just hope that the study provisions would not be forgotten in this legis-

lation so that we can make a determination, if in fact we are going to have permanent legislation, and we should have some means for evaluating whether or not it has been effective.

Senator CORRON. I would doubt if the study would be forgotten. As has been brought out this morning by the Senator from Kentucky, different problems exist in different parts of the country. States which border on the edges of time zones have different problems. I therefore think there would be enough pressure by those who have particular problems that the study would not be neglected, and we would have the study on which to base new legislation.

I merely suggested that we didn't want to leave a hiatus so that there would be no statute. You wouldn't object to that?

Mr. KOCH. No, sir. I would agree that we should avoid a hiatus, especially if this has the energy saving potential that has been indicated.

Senator COTTON. Thank you.

Senator STEVENSON. Senator Pearson?

Senator PEARSON. Thank you, Mr. Chairman. I don't have any questions, but I would like the record to show that I commend your association for this statement. I think it is statesmanlike in character, and while you do have some reservations about the contribution it would make to solving the energy crisis, and cite some of the inconveniences which I hear about from my constituency, it does seem that this is a reasonable approach to go ahead with the study and to go forward with this proposal on a trial basis.

We ought not to forget that many of us, and I suspect a majority of this committee, are making very persuasive proposals, I think, to put the farm community and agriculture on the list of any mandatory allocation of supplies to provide for the national agricultural needs, and to provide for the livelihood of farmers, too. So this is a give-and-take proposition, and I might suggest that you give us a memorandum on what the scope of the study ought to be in addition to the two questions that you raised.

So I do commend you for this statement, and I think it is very helpful to our record. Thank you.

Senator STEVENSON. Senator Cook?

Senator COOK. Mr. Chairman, I would echo some of the remarks made by the Senator from Kansas. I think that you will find, if you do poll your members, that there will be a divergence of opinion, as I think you realize, also. I think we have many approaches, for instance, having read in the Washington Post yesterday that a recommendation has been made that the Government go on a 4-day workweek.

This Senator introduced legislation on a 4-day workweek some time ago, and I think this ought to be taken into our consideration relative to what really would be saved on having a 10-hour day, 4 days a week, and solving this problem with everybody contributing to it in some manner, rather than specifically saying to rural America, who seem to have the most problems with this—the children ride the furthest on buses, some as much as 30 or 40 miles—that we can share in this problem, and we can share in this problem on an emergency basis.

I would not want the situation as it exists today to stampede us into a permanency that we might well regret someday without analyzing many of the aspects that you have touched on in your statement.

So I must say to the Senator from New Hampshire that I would really favor the authority being vested in the President to make this decision, and that the law as it is today would prevail. I think we all share, and we all should share in a crisis when it does occur, but I don't think that we ought to utilize that crisis to accomplish something that we know many, many people in the United States are violently opposed to, and which has a direct effect on their operations in the economic system, their ability to produce, and their ability to meet the market schedules.

So I think we also have to take this into consideration and not ramrod something purely and simply because we are faced with a situation that we obviously hope will not be of a long duration and that we can get out of.

Mr. KOCH. Thank you. I might add, I think perhaps the study that we talked about might also put in perspective the differences between daylight saving time and the savings that might be involved in a 4-day workweek and many of the other considerations.

[The following information was subsequently received for the record:]

**NATIONAL RURAL ELECTRICAL COOPERATIVE ASSOCIATION,  
Washington, D.C., November 19, 1973.**

HON. JAMES B. PEARSON,  
*Senate Committee on Commerce,  
New Senate Office Building,  
Washington, D.C.*

DEAR SENATOR PEARSON: On November 12, I appeared before the Senate Commerce Committee to testify in support of Daylight Saving Time. As you may recall, the supporting testimony included a request for a concurrent study to determine the effect of a year-round Daylight Saving Time program.

Following the presentation, you requested that I submit, for the record, suggestions as to the important information the study might seek. In response, I have submitted below what is felt to be the source of input that should be quantified before shaping future national energy policy.

1. The study should include determination of the net saving in electric power as a result of Daylight Saving Time. In order to achieve an understanding of the total energy picture, the saving should be arrived at both independent of and by fuel source.

2. The study should include a rather detailed report of the net electric power saving on a regional basis. Obviously, in optimizing any energy policy, it becomes extremely important to know what the individual parts are contributing to the whole. Furthermore, regional energy saving, probably, can only be maximized through regionally unique techniques.

3. A determination should be made of the net effect on fuels not consumed in power plant operations as a result of Daylight Saving Time. The net effect might be small, but individual regional effects could contribute materially toward an understanding of the overall impact of a wintertime daylight saving time policy.

4. The study should include the benefits and/or consequences to non-energy related programs. The impact of energy policy on this country is mammoth, but there are other contributors to the national economy and the public well being. In order to evaluate the full effect of Daylight Saving Time, these factors should be brought to light.

5. The net impact of all of the above should be formulated through a system of weighting similar to that in a cost-benefit analysis. Thus, the cumulative effect of Daylight Saving Time can be viewed in perspective and evaluated as to the future permanence this measure should receive.

I hope that these suggestions and remarks are of assistance in your deliberations on this important legislative matter. If I can be of further assistance, please call on me.

With highest personal regards.

Sincerely yours,

BRADLEY R. KOCH, *Staff Engineer.*

Senator STEVENSON. S. 2602 does provide for an experimental period of 1 year and a study. As introduced, the bill requires the study to be conducted by the Department of Transportation. The testimony so far has indicated the most appropriate agency to conduct that study would be the Office of Energy Conservation which has the responsibility for developing energy conserving programs.

Some of the testimony has also indicated that 1 year may be too short a period to conduct a study. If the Congress approves year-round daylight saving time on an experimental basis, it may be necessary to make the period longer than 1 year.

I might enter into the record at this point, if there is no objection, a letter received by the committee from the American Farm Bureau Federation opposing year-round daylight saving time. The Farm Bureau refers to its historical policy against daylight saving time and makes it quite clear that that policy has not been reexamined recently. Its members have not been polled, but the Farm Bureau does reiterate its established policy in opposition to daylight saving time. If there is no objection, that letter will be entered into the record.

[The letter follows:]

AMERICAN FARM BUREAU FEDERATION,  
Washington, D.C. November 8, 1973.

Hon. WARREN G. MAGNUSON,  
Chairman,  
Committee on Commerce,  
U.S. Senate,  
Washington, D.C.

DEAR MR. CHAIRMAN: We are taking this means of presenting views of the American Farm Bureau Federation with respect to four bills dealing with daylight saving time which the Committee will consider during its hearing on Friday, November 9.

The American Farm Bureau Federation is the nation's largest general farm organization, with a membership of more than 2,175,000 families who are voluntary, dues-paying members of 2,831 County Farm Bureaus in 49 states and Puerto Rico. Farm Bureau members are engaged in production and marketing of every major agricultural commodity, and they conduct their farming and ranching operations under all types of climatic and geographic conditions found in the United States.

Policies of the American Farm Bureau Federation are developed through a process that includes study and discussion at community, county, and state levels. Recommendations of the individual State Farm Bureaus are considered at national meetings of the American Farm Bureau, with final determination of policy made by elected voting delegates from the State Farm Bureaus to annual meetings.

Because of the concern of Farm Bureau members with an urgent need to make the most effective use of daylight hours in performance of their tasks—particularly in spring soil preparation and planting operations and in the fall harvesting season—elected voting delegates to the most recent annual meeting

of the American Farm Bureau Federation, held at Los Angeles last December, readopted a statement of policy as follows:

"We support legislation limiting daylight saving time to the period between Memorial Day and Labor Day.

"We continue to support the right of a state to exempt itself from daylight saving time."

This policy position initially was adopted by Farm Bureau at its 1960 annual convention, following introduction in the 91st Congress of legislation to limit daylight saving time to the period from Memorial Day to Labor Day. Subsequently, Senator Marlow Cook of Kentucky introduced S. 664 in the 92nd Congress to limit daylight saving time to the period from Memorial Day to Labor Day. We supported that bill at a hearing held by this Committee in March of 1971.

Of the four bills under consideration at this hearing—S. 385, S. 1260, S. 2568, and S. 2802—all but S. 385 would extend daylight time throughout the entire year, instead of maintaining the current daylight time period which extends from the last Sunday in April to the last Sunday in October.

In view of Farm Bureau's established policy, we oppose any legislation which would extend the period in which daylight time is observed.

We request that this communication be included in the record of this hearing.

Sincerely yours,

CLIFFORD G. MCINTIRE,  
*Legislative Director.*

Senator STEVENSON. The next and the final witness is Mr. Clyde Kirtley, a farmer from Campbellsville, Ky.

Senator COOK. Mr. Chairman, before Mr. Kirtley comes forward, I would like to submit a copy of Congressman Carter's statement to place in the record.

Senator STEVENSON. It will be made a part of the record.

[The statement follows:]

STATEMENT OF HON. TIM LEE CARTER, U.S. REPRESENTATIVE FROM KENTUCKY

Mr. Chairman, distinguished members of the committee, it is good to have this opportunity to present my statement to you today. I want to state that I continue to support legislation which would amend the Uniform Time Act of 1966 to provide that daylight saving time shall begin on Memorial Day and end on Labor Day of each year. I am currently sponsoring such a bill, and I have done so in previous Congresses.

In many of our nation's rural areas, daylight saving time has not always proved to be the beneficial change that its initiators intended it to be. Because of the length of daylight saving time, schoolchildren in rural Kentucky are obliged to trudge along dark country roads to the school buses and to wait in the dark for their ride to school. It is my understanding that this condition exists in rural areas in many parts of the country.

Many parents have expressed to me the fear that in the dark, early hours avoidable accidents might occur. If the period of daylight saving time were amended to include only the three summer months, the hazardous conditions faced by these children would be eliminated.

It is my hope that legislation of this nature can eventually be enacted. However, in view of the fact that we are struggling with an increasingly evident crisis in our energy situation, I support—with reluctance, given my deep concerns—proposals to extend on a temporary basis daylight saving time year-around. I do hope that we can insure that our school bus drivers in dangerous mountain areas will always be properly trained, cautious, and careful.

I have long recognized that we would be facing today a crisis in energy supplies, and I shall continue to see that our supplies are adequately expanded. But I do see the difficulties that daylight saving time cause for many of our rural families, and I hope that we can achieve an appropriate, effective, and balanced solution to this problem.

Thank you, Mr. Chairman.

**STATEMENT OF CLYDE KIRTLEY, FARMER AND LAWYER, TAYLOR COUNTY, KY.**

**Mr. KIRTLEY.** Mr. Chairman, I am Clyde Kirtley, a farmer and lawyer from Taylor County, Ky., and I would ask that my statement be included in the record.

**Senator STEVENSON.** Without objection.

**Mr. KIRTLEY.** Briefly, I would like to touch on the points that Senator Cook has already raised about the problems of States which find themselves on the edges of time zones. In Kentucky, it is a tremendous problem for us, one which is quite unlike the needs of a large metropolitan area like New York City, or Los Angeles, which is on the end of another time zone.

We find ourselves with the problem of our school children and buses. I think our farmers, in general, are opposed to daylight saving time, but we realize the energy crisis, and that we have as much a stake in it as anybody else, and we are willing to make sacrifices. But we would urge this committee to consider leaving States the option to work out their own time problems, realizing that the problems of Kentucky, and States like Tennessee that are equally split are entirely different than those of States which have most, if not all, of their counties within one time zone, such as Illinois.

**Senator STEVENSON.** Thank you.

**Senator Cook.** Mr. Chairman, I am delighted to have Mr. Kirtley here. He points out very effectively, Senator Cotton, in his statement, that "As you may remember, during the 1960's the western boundary of the eastern time zone was shifted westward. As a result, the official time in many counties in Kentucky and other States were changed from central standard time to eastern standard time. This changing of the time zone boundaries was then followed by the Uniform Time Act of 1966, whereby these same counties were effectively forced to adopt daylight saving time. Consequently, in a few years the time for many people changed 2 hours even though the people had not changed their residences. The citizens of Taylor County, Ky. were subject to this change."

Taylor County is one of the counties that is on the extreme western edge. As a matter of fact, you don't have to go very far from Campbellsville, and you have to change your watch, or remember the time is earlier.

That is why I say, Mr. Chairman, that I don't think that the American farm community has any objection to utilizing what has to be utilized in this Nation on an emergency basis, but when that emergency is not in existence, we feel that a far better and a longer look should be taken, not only at this entire situation, but the realigning of time zones because of the problems that it faces.

I really don't mean to take too much time, Mr. Chairman, but when I was county judge of Jefferson County, in the fall we were faced with a horrible problem when daylight saving time was still in existence during September and October, when we were required in local government to hire hundreds of additional schoolguards and it had an

amazing effect on our budget. Thousands of dollars had to be spent for flares. We had young children hit, and we had lady police guards struck by automobiles, when school was about to start in these schools and it was still totally dark.

Mr. KIRTLEY. If I may, I would like to echo Senator Cook's comments, that our schoolchildren find November a much, much better month than they find October, because of the change back to standard time, in that they board the schoolbuses in the morning in the daylight hours, as opposed to the darkness.

Senator COOK. As Senator Cotton knows, we have had a running fight now for 4 years over the period of the end of September and October, and we have given away to the beauty of New Hampshire for the darkness of our school children.

I don't mean that to be critical, but again we find ourselves in a situation where his State is one of those very delightful States that happens to be in the eastern fringe of a time zone. In our part of the country I might say, Mr. Chairman, election morning, which was Tuesday a week ago, I went to the polls at somewhere around 7 o'clock, and a little after in Washington it was daylight, but in Louisville it was absolutely dark.

So there is this divergence, and I think we have to give it serious consideration. I must say in relation to what Mr. Kirtley has said, I have a statement, and a letter from the Kentucky Farm Bureau Federation that I would like to put in the record at this time.

Senator STEVENSON. Without objection.  
[The statement and letter follow:]

#### STATEMENT OF HON. MARLOW W. COOK, U.S. SENATOR FROM KENTUCKY

The problems resulting from the adoption of daylight savings time have concerned me for some time and in past sessions, I have introduced legislation to shorten the period during which daylight savings time would be in actual use. In the past this Committee by a vote of 13 to 5 favorably reported a bill to that effect: however, floor action was prevented.

In this world of jet travel and moon shots, one would think that the question of which clock to use would be of little consequence. However, to millions of Americans, especially parents and farmers, this question has become a most serious one. Daylight saving time has become a severe hardship to many citizens: not simply the operators of drive-in theaters, but millions of parents of school children and farmers in nearly every state.

To most farmers, daylight saving time is an obstacle to the efficient utilization of daylight hours during the Spring and Fall seasons when the planting and harvesting are done. The "fast time" forces them to begin and end their daily work later, often creating numerous conflicts with social, civic and family obligations. Farmers have displayed particularly enthusiastic support for S. 385, since it alleviates their problem during the periods when daylight saving time creates the most hardships, late Spring and early Fall.

Parents of school children have also voiced strong objections to the use of daylight saving time during the Spring and Fall months. Their primary concern is that their children must walk to school or wait for school buses in darkness, thereby exposing themselves to potential hazards. In parts of my State, the sun does not rise until after 8:00 a.m. in October, when school has already begun. This problem is not limited to Kentucky, rather it is one faced by parents and school children throughout America.

I realize that daylight saving time does have supporters: namely those people who are part-time gardeners or farmers, golfers, and others who need

the extra hour of daylight after work for these or other endeavors. Also, I most definitely realize that when I introduced S. 385, there was no energy crisis—however, now that such a situation does exist—we must look to and analyze the facts and arrive at a decision based on need which will be workable for all without inflicting undue hardships.

KENTUCKY FARM BUREAU FEDERATION,  
Louisville, Ky., November 6, 1973.

Hon. MARLOW W. COOK,  
U.S. Senate,  
Old Senate Office Building,  
Washington, D.C.

DEAR SENATOR COOK: The Kentucky Farm Bureau Federation, with a current membership of 147,219 families in Kentucky, is opposed to an extension of daylight saving time.

We know of no evidence to support the contention that extending daylight saving time during the winter months would result in the saving of energy. On the other hand, we do know that such an extension would serve to work hardships on many people, especially those who must leave their homes during the early morning hours.

An extension of daylight saving time to include the winter months would work a special hardship on school-age children who must either walk to school or must leave their homes before daylight to board school buses. Many children in cities walk considerable distances to school, and many children in rural areas walk considerable distances to board buses.

To extend daylight saving time is, at best, a cosmetic attempt to tackle the real causes of today's energy shortages. Some of these, as you know, are recent modification of automobile emission systems resulting in increased gasoline consumption, environmental restrictions on the burning of coal, and failure to develop alternative sources to replace fossil fuels.

It is our recommendation that the Congress proceed with a real energy research and development effort and not enact legislation, such as extending daylight saving time, which obviously will bring hardships to many people and not deal significantly with the problem.

We would appreciate your making this letter a part of the record at the hearing to be held on proposals to extend daylight saving time.

Sincerely,

LOUIS F. ISON, *President.*

Senator COOK. I might say there are interesting comments, Mr. Chairman, that I happened to receive from a Mr. Saunders who is vice president of Radio Akron in Akron, Ohio, relative to the situation concerning radio stations. How many radio stations are there in Campbellsville, Mr. Kirtley?

Mr. KIRTLEY. There is one.

Senator COOK. I would expect that is a daylight-to-sundown radio station.

Mr. KIRTLEY. No, sir, the radio station there comes on at 6 o'clock in the morning. However, there are radio stations in surrounding counties, and it poses a problem, because when we have inclement weather in the wintertime, the greatest concern to the local people is whether the school is going to be held that day, and they look to one place, and that is to the local radio stations.

Now, the schoolbuses have to be running before daylight, and the radio stations can't go on to get the children to school, the radio stations can't go on the air until daylight to inform the people as to whether the schools will in fact be in session. I suggest to you that this creates a most serious inconvenience on behalf of the people. It is one that is peculiar to that area.

Senator Cook. I might say, Mr. Kirtley, that Mr. Saunders in his final paragraph says it would be ironic if one proposed countermeasure to the crisis would inhibit to any degree our vital and expanded need to communicate, and we know full well the biggest percentage of children in Taylor County catch schoolbuses in the dark, and if there are in the other surrounding communities daylight-to-sundown radio stations those stations will be 2 hours away, really, from being on the air when schoolbuses are dispatched to pick up children.

Senator CORTON. I would like to have the record show, and I would like to have Mr. Kirtley know, that the Senior Senator from Kentucky, Mr. Cook, has waged a good fight on this issue. There has never been a desire by the Senator of New Hampshire to have a permanent Federal law which might force undue hardships upon the States.

Senator Cook has been one that understands the existing statute. The Kentucky Legislature could remedy the situation, because we are not forcing daylight saving time on the State of Kentucky, if it chooses to exempt itself by law. Undoubtedly, now that we have the energy emergency, there must be adjustments by schools in their hours, and probably in the rules of the FCC with respect to radio stations.

But, I do want you to know, Mr. Kirtley, as a Kentuckian your Senator has left no stone unturned to try to remedy your situation. Anyone on Capitol Hill can testify to that, especially the Senator from New Hampshire, because he has borne the full force of Senator Cook's opinions.

Senator Cook. I wish to thank the Senator from New Hampshire, and tell him that that bill has been reintroduced again, and it has been reintroduced with my colleague from Kentucky, Senator Hudleston, so we will now be able to work both sides of the aisle in relation to the solution of the problem. Because it is a problem, and I think it has to be taken into consideration.

Unfortunately, we seem to look at things, Mr. Chairman, relative to New York and relative to Los Angeles, and relative to the major metropolitan areas from which not only do most of us come, but I suspect most of our staff members come from, and I don't think they fully realize the significance of schoolbuses that are picking up children at 6:15 in the morning, when in fact, the sun doesn't come up until after 7 o'clock.

It would be very interesting for you to know, as a matter of fact, just as a cursory aside, Mr. Chairman, that this Senator enjoys hunting geese and ducks, and if you will look at the table of daylight in Maryland and look at the same table of daylight in the central flyway, you see somewhere in the vicinity of about an hour 12 minutes difference before the sun comes up.

That is no inconvenience to the hunter, believe me, but it certainly is to the children, and I think the Senator makes a good point that maybe we should talk to the educational organizations in the United States relative to revamping, during the course of this emergency, the ability to change school schedules, and I commend him for that recommendation.

Senator STEVENSON. Would the Senator yield?

Senator COOK. Yes.

Senator STEVENSON. I think we should communicate in some way if it is possible with the school administrators throughout the country. Another possibility occurs to me, as a result of some of the Senator's earlier remarks about the time zones.

If the Congress is to approve daylight saving time on an experimental basis, it might be useful to assure that the study is addressed to examination of the time zones.

Senator COOK. I know the Senator from New Hampshire dreaded to hear that, but in all fairness, as you well know—

Senator CORRON. On the contrary, I do not. As a matter of fact, the distinguished Senator from Wyoming and I were perfectly willing to meet the problem of States, like Kentucky, in split time-zones. But, when the bill got to the House, we encountered a problem. I remember the Senator from Missouri, Mr. Symington, and his colleagues made a plea at the time the bill passed, concerning a situation in parts of that State. They wanted to be able to have two time zones in that State.

We agreed to it, and accepted the amendment. The House threw it out and said that as long as the State legislatures could deal with the situation to exempt the State by law from observing daylight saving time, then the amendment was not necessary.

But, most certainly, I agree that the matter of time zones should be taken into consideration under the study. To be very frank, I had hoped that we would have a bill that would have two sections—one which would retain the present law so that it would automatically return to effect at the end of the emergency giving us time to consider the recommendation of the study; and another, which would authorize the President of the United States to declare an emergency, imposing daylight saving time nationwide for the duration of the declared emergency.

I am afraid of the situation where Congress lays down an iron-clad rule for every State in the Union, be it for daylight saving or standard time. I still think that the concept I previously outlined would be the best way for us to handle it. But, that is a snap judgment, and when we get into executive session we can thrash that out.

Senator COOK. May I say, Mr. Chairman, I am not totally familiar with it. I am only familiar with discussions I had with the two Senators from Indiana, where there is a situation in Indiana where there are 12 counties on the western edge of Indiana next to Illinois that find themselves in kind of an odd situation, where they have opted to go to the central time zone, and I think that we will probably hear from the Senator from Indiana during our executive sessions in regard to those particular 12 counties. And as, you well know, he proposed legislation last year as a corrective measure for that.

But I think this dialog is very helpful, and I think Mr. Kirtley has been very helpful, because I must say in all fairness this Senator would be opposed to an automatic, complete daylight saving time year-round throughout the United States without far more study than we can give within the period of time allotted.

I think there are many things that we have to consider, and I

think Mr. Kirtley has raised many of them. I think there are many organizations that we can talk to relative to voluntary action on their part and that they can take during the course of this crisis, but I would hope because of this that we don't hurt a great segment of the economy in the United States—and I am talking about the working economy in the United States—so that we can look to the gentleman who has an hour more in his boat or an hour more on the golf course, because I think we have to weigh this in regard to the crisis and not in regard to convenience.

I think the record should show, Mr. Chairman, that in the case of Indiana, the bill offered in the last session became law, and it now provides to States with parts thereof in more than one time zone exception under the law.

I agree with that, and I might say to Mr. Kirtley that aside from any emergency or aside from any action that may come as a result of legislation that may seriously alter the existing law, that this apparently still is a matter that can present itself to the respective State legislatures, and particularly to ours which will meet in January, relative to a particular area, or particular areas of the State as they find themselves in serious predicaments in regard to the time zones.

So I would say it is still a matter that certainly could present itself to the State legislature to see whether they wish to really tackle this matter. As you well know, we attempted to tackle it once, and failed as a result of a tie vote in the Senate—not in the House. The House overwhelmingly passed it. So I might say in all fairness that until such time as any material changes are made which may alter those sections of the statute, that this option apparently still seems to be available to the State legislature in Kentucky.

Thank you, Mr. Chairman.

Senator STEVENSON. Mr. Kirtley, I want to assure you that your concern about the welfare of schoolchildren and farmers is shared by this committee.

I am not sure, however, in my own mind whether your primary concern is with the schoolchildren or with the farmers.

What economic injury would farmers in Kentucky suffer as a result of winter daylight saving time? I have a farm, and I can see some of the difficulties in the summer months when farmers are the busiest, but in winter is daylight saving time a real problem for farmers in Kentucky?

Mr. KIRTLEY. Senator Stevenson, as you know, these comments were prepared in advance and were specifically advanced somewhat to the provisions of Senator Cook's bill. The end of September to October is a problem month. It doesn't inconvenience farmers far more in that month than it would in January.

I think the winter months are harder on the schoolchildren.

Senator STEVENSON. The school hours could be adjusted. Daylight saving time doesn't change the amount of daylight. It changes clock time. Local schools could adjust their schedule to daylight saving time in the winter?

Mr. KIRTLEY. Mr. Chairman, I wholeheartedly agree with you,

and I don't know that anyone could phrase it any more succinctly and beautifully than you have, but I ask you to take your thoughts one step forward.

Let us consider all the mothers who work either part or full time. Let us consider in rural areas where the job market is either dependent upon local service industries, local retailing establishments, or local industry, be it manufacturing or pure assembly, will not change with the time of the schools. They exert pressure on changing the times and operations of these local industries, and what differences do we really have in terms of conserving fuel with the daylight hours if we say we start our day at 7:30 and end at 4:30, or we say that we start at 8:30 and end at 5:30 and change the time 1 hour? Have we really done anything for those areas? We may have done a great deal for the urban areas.

Senator STEVENSON. Mr. Koch, among others, indicated that the real energy savings would be in the urban areas.

Now, we are primarily concerned about inconvenience in the rural areas, where we don't see the potential for energy savings. The hours for the businesses, as you indicated, too, could be adjusted if daylight saving time is an inconvenience for people in rural areas.

There is another possibility that ought to be considered at some point. You have indicated that daylight saving time causes the greatest inconvenience to some farmers in the summer and fall months, including October. Those are the months during which daylight saving time probably saves the least amount of energy. The real savings as a result of daylight saving time will be in the winter months. So one possibility is that we might allow the States to opt out of daylight saving time when the increased energy consumption would be minimal.

Senator Cook. I might add, Mr. Chairman, that one of the problems in the early fall under daylight saving time is the harvesting of tobacco relative to getting labor. When you have that extra hour in the morning, it means that you are going to take that much longer before you can get into the field because of heavy dew at that time of year, which is extremely heavy, and it really sets them way back with respect to their ability to cut and transport the tobacco. That has been a real problem with that one particular product, more than anything else.

Mr. KIRTLEY. I would certainly agree with that, Senator Cook, in this regard, and to press again, Mr. Chairman, if I may, since there doesn't appear at least in the rural areas to be any noticeable impact on the energy conservation, to remember again the impact that this can have, that the time change can have, on the social and community and church life of rural communities where part of the people work by the Sun and part of the people work by the clock. This is again a problem that the urban areas do not have.

Senator Cook. I would also add, Mr. Kirtley, for the chairman's benefit, that for those areas in the western areas of time zones again, if we, for instance, could not get an agreement or some kind of understanding with the school administrators, you are going to consume an awful lot of electricity, because every school is going to be completely lit for that first hour or that first hour and a half in the

morning. I might suggest to you that we might find ourselves saving in one area and consuming in another, and that presents a rather strange situation, because as you well know, with many programs that we now have in the schools, school breakfast programs, this sort of thing, many schools are open to schoolchildren starting as early as 6:30 or 7 o'clock in the morning, and to that extent in those areas of the country, if they open at that time every light in that school is going to be on for an extra hour and a half, and that is just going to add to the problem.

I don't think it is an insurmountable problem, Mr. Chairman, but I think it is one we have to consider.

Senator STEVENSON. Thank you very much, Mr. Kirtley.  
[The statement follows:]

#### STATEMENT OF CLYDE L. KIRTLEY

Gentlemen: Please permit me to introduce myself. I am Clyde L. Kirtley, a farmer and lawyer from Taylor County, Kentucky, located in the central part of the Commonwealth. I am not representing or speaking on behalf of any organized group. I appreciate the opportunity to inform you of the opinions which I believe that most Kentuckians have concerning daylight saving time.

In general, I urge you to enact the principles of S. 385, introduced by Senator Cook for himself and Senator Huddleston. I ask you to oppose S. 1260, introduced by Senator Pell for himself and Senator Pastore, S. 2568, introduced by Senator McIntyre, and S. 2602, introduced by Senator Stevenson.

In my opinion, Kentuckians overwhelmingly support the thrust of S. 385 because its enactment would permit Kentucky rural school children to board school buses in the daylight hours. As you may remember, during the 1960's the western boundary of the Eastern Time Zone was shifted westward. As a result, the official time in many counties in Kentucky and other states was changed from Central Standard Time to Eastern Standard Time. This changing of the time zone boundaries was then followed by the Uniform Time Act of 1966, whereby these same counties were effectively forced to adopt daylight saving time. Consequently, in a few years the time for many people changed two hours even though the people had not changed their residences. The citizens of Taylor County, Kentucky were subjected to this change.

The majority of Kentucky is served by low-density, consolidated school districts. To attend these more or less consolidated schools, children must ride buses. Because Kentucky is a poor state in terms of educational resources, the buses in many school districts must travel more than one route each day. As a result, classes begin at different times for different students, depending upon where they live. Many children who must board a bus on its first route must board it in the dark in October. The enactment of S. 385 would alleviate this hardship. The enactment of either S. 1260, S. 2568 or S. 2602 would instead add to this burden, making the early morning hours dark from October to April, rather than offering light in November, March and April, as they do now.

I am certain that the overwhelming majority of Kentucky farmers and, based upon my experience, I believe the majority of farmers throughout these United States, support the thrust of S. 385. Although the alteration of the clock does not affect the rising and setting of the sun, the changing has a severe impact upon church, civic and community life in rural areas and farmers' abilities to participate in these activities. Call it whatever hour we wish, the time at which a field dries off sufficiently to enable farmers to harvest crops is dependent upon the sun. During the summer months, central Kentucky farmers are effectively precluded from participating in most community activities because it does not dry off until noon to three p.m., depending upon weather conditions, and does not become dark until about nine p.m. This real time difference becomes especially burdensome for farm families whenever one member works off the farm at a job whose hours are based on the normal working day. The elimination of daylight saving time for the months of May

and October would permit farm families to participate more fully in church, civic and community activities during those months.

I suggest that the Committee consider amending S. 385 to end daylight saving time on the last Sunday of September of each year, rather than on September 30. In my opinion, changing the clock early on the last Sunday of September would be less disruptive to industry than would changing the clock during a normal business hour.

I thank you for affording me the opportunity to appear before you today.

Senator STEVENSON. The committee has received a number of statements which, if there are no objections, I will enter in the record.

There is a letter from Congressman Wiley of Maine in opposition to daylight saving time.

[The letter follows:]

CONGRESS OF THE UNITED STATES,  
HOUSE OF REPRESENTATIVES,  
Washington, D.C., November 5, 1973.

HON. ADLAI E. STEVENSON III,  
Russell Senate Office Building,  
Washington, D.C.

DEAR SENATOR STEVENSON: I understand that you will be holding hearings on or about November 9 regarding proposals to extend Daylight Savings Time to the full year.

I regret being unable to attend those hearings, but would appreciate your consideration of my views in opposition to these proposals. Rather than extend Daylight Savings Time, the period of coverage should be shortened. For several Congresses I have proposed bills to limit Daylight Savings Time to the period between Memorial Day and Labor Day, the three summer months. My H.R. 2085 and bills by other colleagues to this effect are pending before the House Interstate and Foreign Commerce Committee.

Many constituents advise us of their concern because their children are subjected to serious inconvenience and danger in the dark hours of the early morning when, in many rural areas including Northwest Iowa, the little children have to wait at the end of lanes, exposed to cold and wet, to be herded out in real danger onto the busy highways to board schoolbuses. The earlier hour in September and October is not only much colder and darker, it is also far more risky for driving. Even if only one less schoolbus accident was avoided by reverting to standard time on Labor Day, it is surely worth the effort. Continuing Daylight Savings Time throughout the winter months would drastically increase the potential danger to these children.

It is argued that Daylight Savings Time extended throughout the year would save fuel and energy. I very much doubt whether this is very sound reasoning and suspect that such an extension would instead cause greater consumption of energy and fuel. The earlier you must heat and light the house, school or office on a winter day, the more heat is required. A one hour delay in rising allows the sun to help heat the home, so that less fuel is required to overcome the cold, and the school or office is less apt to need lighting than where work begins before dawn. On the other hand, less fuel and energy is required at the end of the school day, to keep heated for an hour an office, school or home that is already warm.

I am not aware of any drop in crime upon Daylight Savings Time taking effect in late April or any sudden surge in crime when Standard Time now takes effect in October, and I very much doubt that making Daylight Savings Time go the year around would have any real effect on crimes of violence.

Any possible convenience that Daylight Savings Time extended might promise some adults would be more than overcome by the detriment to children, and the families of those children, especially in rural areas.

Another very good reason for not extending Daylight Savings Time, and for shortening it to the three summer months, is given in the enclosed letter from my good friend James W. Maurer, President and General Manager of KWMT, Fort Dodge, Iowa. I urge your consideration of this letter and of the other

arguments presented, and your support of opposing extension of Daylight Savings Time and for placing it under reasonable limitations. Thank you for your cooperation.

Sincerely,  
WILEY MAYNE, MC.

Enclosure.

KWMT RADIO,  
Fort Dodge, Iowa, October 31, 1973.

Congressman WILEY MAYNE,  
House Office Building,  
Washington, D.C.

DEAR WILEY: I am extremely concerned about proposed legislation for permanent daylight saving time as it would severely restrict KWMT Radio. Please observe the following:

	Original sign on authorization (a.m.)	Sign on following legislation of summer daylight saving time	Sign on if proposed permanent daylight saving time is legislated (a.m.)
November.....	7:00	.....	1 8:00
December.....	7:45	.....	1 8:45
January.....	7:45	.....	1 8:45
February.....	7:15	.....	1 8:15
March.....	6:30	.....	1 7:30
April.....	6:10	.....	1 7:00
May.....	6:00	.....	.....
June.....	6:00	.....	.....
July.....	6:00	.....	.....
August.....	6:00	1 6:15	.....
September.....	6:00	1 7:00	.....
October.....	6:30	1 7:30	.....

1 Time change legislation adversely affecting 9 out of 12 months for KWMT.

KWMT will have been legislated from Column (A) to Column (C) if the current proposal is approved for permanent daylight saving time.

Located in an agricultural area morning time is of the utmost importance to our operation. Our stations basic financial support as well as basic service is agriculture which is early morning oriented. What is bad enough now would become totally intolerable. Our ability to survive under such circumstances would be in question.

KWMT's frequency is a Mexican and Canadian used frequency. Mexico and our Congress has approved a joint treaty negotiating the morning sign on problem with Mexico. No negotiations have been attempted to my knowledge between the U.S. and Canada up to the present time.

Your help is respectfully requested. Legislation of permanent daylight saving time without adjustment of our sign on would be catastrophic to KWMT.

Sincerely,

J. W. MAUBER,  
President/General Manager.

Senator STEVENSON: A letter from John Egan of the Metropolitan Sanitary District of Greater Chicago in support of a one-half hour change.

[The letter follows:]

METROPOLITAN SANITARY DISTRICT OF GREATER CHICAGO,  
Chicago, Ill., October 26, 1973.

HON. ADLAI E. STEVENSON III,  
Russell Senate Office Building,  
Washington, D.C.

DEAR SENATOR STEVENSON: We at the Metropolitan Sanitary District are very much interested in your proposal to save energy by way of extending daylight savings time into the winter months.

However, as the result of consulting on this matter with Bart T. Lynam, our General Superintendent, and other members of the staff, we would like to offer a suggestion.

We might point out that on the "shortest day" of the year, December 21, if we go into daylight saving time during the winter the sun will rise at 8:14 a.m. and set at 5:28 p.m. Many of our union contracts call for a working day between 8 a.m. and 4 p.m. This would mean that some of our projects would have to be worked on in the dark, which involves many handicaps.

However, if daylight saving time were cut down by one-half hour, on the shortest day of the year with the sun rising at 7:44 a.m. and setting at 4:58 p.m., we could accommodate ourselves to construction needs as well as many other problems that might be much more serious if the one hour extension prevailed.

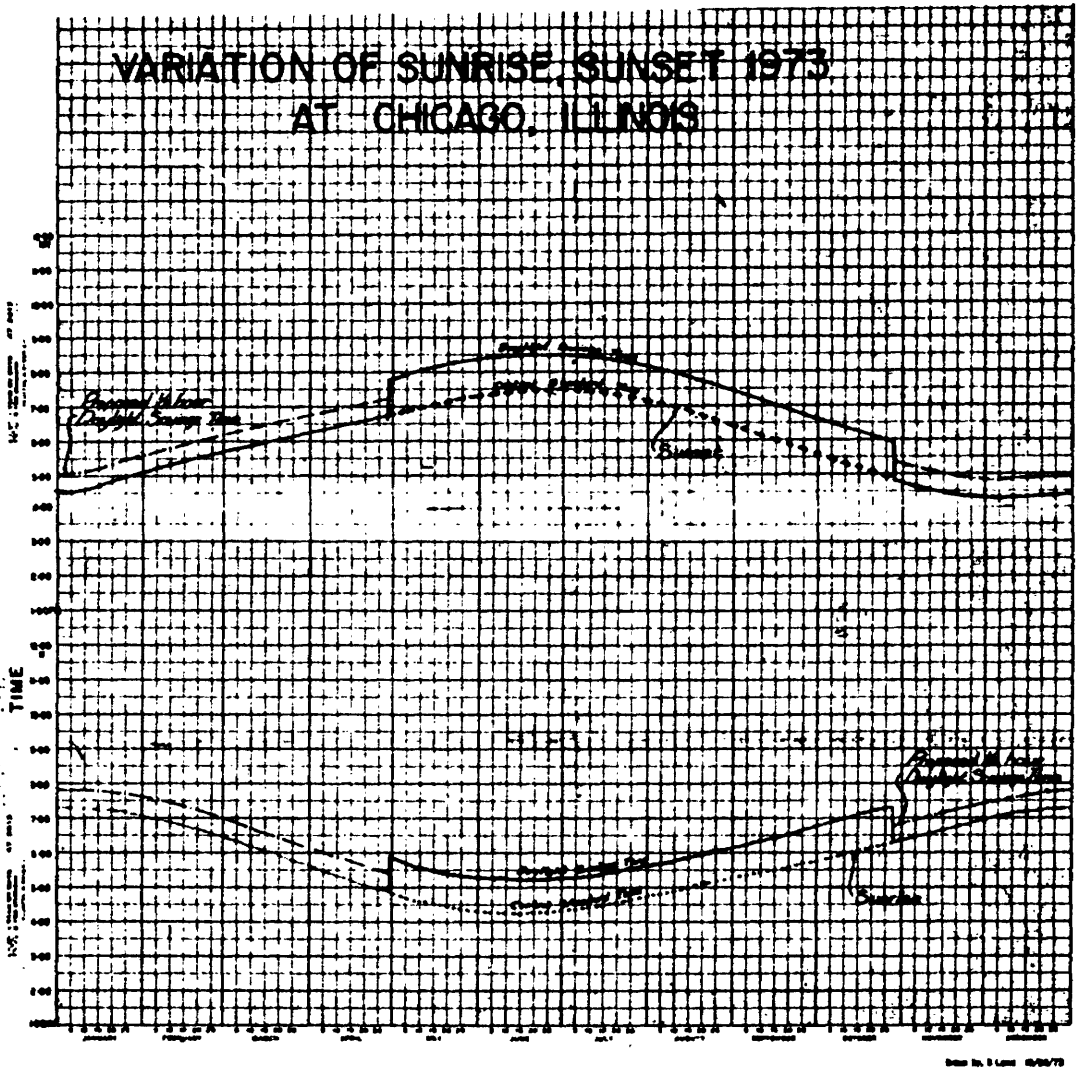
We would also like to note that by extending daylight saving time by one-half hour, we would be maximizing our utilization of the availability of light during the winter time period. The compromise probably would be of assistance to a great many others besides ourselves.

May we leave this suggestion with you for study by your staff?

Sincerely,

JOHN E. EGAN.

Enclosure.



Senator STEVENSON. The committee also has a letter from Milton Shadur of Chicago opposing daylight saving time which will be entered into the record.

[The letter follows:]

CHICAGO, ILL.,  
November 6, 1973.

HON. WARREN MAGNUSON,  
Old Senate Office Building,  
Washington, D.C.

DEAR SENATOR MAGNUSON: When the news services reported Senator Stevenson's interest in sponsoring an extension of daylight saving time on a year-round basis (amending the existing federal statute in that respect), I wrote him calling his attention to some aspects of the problem that I thought might not have been considered. Incidentally, the year-round daylight saving problem is one that originally came to our firm's attention professionally, but about which the writer has since thought to a good deal as a private citizen.

After receiving my letter, Senator Stevenson arranged for his special counsel to furnish me with some of the background material on which that office was replying to support its conclusions as to supposed energy savings—a prime consideration under today's conditions. Further investigation, however, confirms my earlier conclusion—reached before the energy crisis became so apparent—that the proposal to extend daylight saving into winter months exemplifies the kind of legislation that has surface attractiveness but does not bear hard scrutiny.

Before I turn to the arguments (including that of energy conservation) advanced to support the proposed change, let me point out the serious drawbacks that in my opinion more than outweigh any possible benefits and that I would respectfully commend to your Committee's consideration:

1. During the winter months, daylight saving time (at least in the northern latitudes in the United States) would involve substituting an hour of darkness in the early morning for what would otherwise be an hour of light. Thus the many schools that begin classes shortly after 8:00 a.m. would be starting their school days at the present equivalent of 7:00 a.m. if daylight saving time were extended into the winter. It should be understood that the sun will not rise in Chicago (for example) until as late as 8:15 some mornings, and in cities such as Seattle, Detroit and Louisville sunrise would be as late as 9:00 a.m. or thereabouts (the periods of half-light that exist after sunrise must also be added to those times). Thus both students and teachers would have to be in transit in total darkness during the periods of maximum traffic hazards and worst weather. Those risks would of course create the greatest danger to students at the lower grade levels (see the enclosed clipping reporting on the British experience). Parochial school students would be particularly affected, since many may start earlier to allow time for pre-school mass. The Department of Transportation study of the subject confirms these views, characterizing the problem as "particularly acute for children traveling to school in the morning." It then suggests that the problem be dealt with by a total shift in school hours—a proposal that seems wholly impractical on an across-the-country basis.

2. Many Orthodox Jews and their organizations are vigorously opposed to year-round daylight saving time for the reasons reflected in the enclosed letter that appeared in the *Chicago Sun-Times* when a like proposal was made in Illinois. Apparently these and other considerations caused the abandonment of a year-round proposal in New York, and we know that the same type of major opposition developed to the Illinois proposal. Also enclosed is a local news commentator's statement of a few years ago that casts some added light (if you will forgive the pun) on the matter.

3. As the other enclosed clipping shows, in 1971 Great Britain reversed its earlier adoption of year-round daylight saving time for reasons that apply with equal force to at least the northern part of our own country.

As against these compelling disadvantages, the principal argument now advanced to support year-round daylight saving time is a claimed saving in

fuel consumption. The older arguments possessing surface appeal (shifting a wasted hour of daylight in the morning to the end of the day; a possible reduction in certain crimes; and possible reduction in traffic accidents) continue to be advanced as well. Let me treat with each of these subjects in turn:

1. Heaviest reliance on the subject of energy savings has been placed on a purported RAND Corporation study, said to have found that electricity consumption across the country might be curtailed by as much as 2%. It develops, however, that there is no such report. Instead, work is being done in this area by one or two RAND employees in their own spare time, and they themselves have confirmed that the work is incomplete, inconclusive and not to be considered a real report of the national research organization. Indeed, the individuals involved have now advised that the potential electricity saving is exaggerated and "quite optimistic" (they are not prepared to stay with *any* specific number as to claimed savings, either the reported 2% figure or any lower amount) and that they believe that winter daylight saving time could possibly result in an *increase* rather than decrease in consumption of motor fuels. In summary, the individuals are still in the middle of their study, believe that the change could even result in a net increase in energy demand, and in any case would regard any theoretical savings as largely dependent on the use of different fuels by the nation's electric utilities (a factor clearly independent of daylight saving time and capable of accomplishment, if at all, only over a long period of time). The Department of Transportation has hazarded a guess that there may be potential savings in energy consumption but it is not certain either of the fact or the amount of such savings. Its statement on the subject provides neither an evidentiary basis nor methodology for estimating savings.

2. As to the extra hour of daylight at the end of the day, daylight saving time for the May through October months makes eminently good sense from a recreational point of view. During the winter months, however, the extra hour of daylight would occur (a) *before* rather than after dinner and (b) during the season when opportunities for, and inclination toward, recreational time and activities are really minimal in most of the country.

3. As for the crime question, we have never seen statistics to indicate that there is in fact a greater incidence of purse snatching, mugging and like crimes during winter months under standard time than would exist with a one hour shift in time. In Chicago the highest incidence of emergency calls occurs in the early evening; during the winter our city would be in total darkness at those times, whether or not year-round daylight saving time were in effect. On December 1 sunset in Chicago is about 4:20 p.m.; daylight saving time would change this to 5:20, but the city would still be totally dark well before 6:00 or 7:00 p.m. (when reported crimes are on the upturn). The Department of Transportation cites the Department of Justice as expressing the obvious conclusion that "persons intent upon committing those types of crimes which are prevalent in darkness would accommodate themselves to the later darkness resulting from daylight saving time by waiting to attempt their crimes until darkness actually falls." This is incidentally without consideration of the fact that the extra hour of darkness in the morning might cause an increase in crime during that period, when school children would be particularly vulnerable.

4. On the subject of traffic accidents, all that has been asserted in support of the proposed change is a kind of theorizing that the increase in morning accidents might be less than the hoped-for decrease in evening accidents. In the northern parts of our country, in which most of the urban population is concentrated, the homeward drive time would be in darkness during much of the winter whether or not daylight saving time is in effect. It is usually considered that dusk is even more dangerous from a traffic point of view than darkness, and one effect of the proposal would be to move twilight hours into the evening rush traffic rather than hours of darkness for some portion of the winter period, thus presumably increasing rather than reducing traffic dangers. The theoretical gains of an indeterminate nature must be measured against the known risks to school-bound children mentioned earlier in this letter.

In summary, it appears to me that the known disadvantages of the proposed legislation are sought to be balanced by gains that are no better than speculative. At a minimum, there should be further responsible study addressed to the major subject of energy savings, before the existing arrangement is disrupted

by the creation of known hazards in the morning hours. The experience of Great Britain should be instructive and persuasive.

Since I am unable to be in Washington on the dates scheduled for the Commerce Committee hearings, I am submitting this statement in lieu of personal appearance. For your convenience, copies are enclosed for distribution to members of your Committee.

Respectfully submitted,

MILTON I. SHADUR.

Enclosure.

P.S. When I reread this letter, I noted that I had not made it clear (as I intended) that the information as to the unreliability of the claimed "RAND Report" was not of course known to Senator Stevenson at the time he submitted S.2602 for enactment. The facts in that respect were developed from subsequent investigation into the claimed study.

M.I.S.

#### BRITAIN REVERTS TO GMT ON SUNDAY

LONDON, Oct. 28.--Britain's first experiment in going European ends on Sunday, and the country puts its clocks back an hour and reverts to Greenwich Mean Time—GMT—for the winter.

It will mean fewer people setting off for work in morning darkness but will put Britain one hour behind Common Market time.

The experiment with year-round British Standard Time, putting the clocks forward a daylight-saving hour permanently instead of summer only, began three years ago. BST is the same as Western European Time.

But last year—after loud protests from victims of early morning gloom—Parliament voted to revert to the old system of GMT in winter and BST in summer.

Delighted with the change are farmers, early risers like milkmen and postmen, school children and the Scots as a nation.

#### EFFECT

Less happy are businessmen who deal with the continent and will now start and finish work an hour earlier than their European counterparts during the winter months.

The changeover will shorten at least a couple of hours off the working day as far as business contacts between Britain and Europe are concerned, they complain.

What doomed all-year-round BST was a wave of protests from Scotland where dawn for some parts of the country was delayed until 10 am and protests from road safety organisations that school children were in danger of being run down as they walked to school in the dark.

Office workers in London complained it was still pitch dark when they set out for work, and some said the lack of daylight disrupted their sense of time so much they dropped off to sleep again and were late at the office.

—AP.

[From the Chicago Sun-Times]

#### OPINION OF THE PEOPLE

#### DAYLIGHT SAVING BILL

Illinois HB 1717 would put daylight savings time into effect in this state throughout the entire calendar year.

The sponsors of this bill, as well as The Sun Times which has endorsed it, were not aware of an effective infringement of the civil and religious rights of a large group of Illinois citizens which this bill would bring about. According to Jewish law, the earliest time that morning prayers, which are recited by observant Jews can begin, even under emergency conditions, is one hour before sunrise. If daylight savings time would be in effect during the winter months, thousands of Orthodox Jews would be deprived of the possibility of reciting their prayers, since they would have to be at work or on the way to work before daylight.

Another consideration, which the sponsors and endorsers of the bill may not have realized, is that thousands of public and parochial school children, many of whom travel for as long as an hour by bus, would have to begin their trip to school in the morning in the darkness of night.

A similar bill was proposed in the New York Legislature during this session. It was proposed by Con-Edison for much more compelling reasons than the bill in Illinois; to relieve the strain on the overextended New York power system. When these considerations were brought to the attention of the sponsor of the bill, however, the bill was withdrawn. A similar bill was withdrawn from the New York Legislature in 1969 for the same reasons.

The Orthodox Jewish community of Illinois feels, therefore, that the sponsors and endorsers of the bill should withdraw their support, since such a change would involve undue hardships and a curtailment of religious liberty.

Rabbi Chaim D. Keller,  
Rosh Hayeshiva (President),  
Rabbinical College of Telshe,  
Chicago,  
Chairman, Public Affairs  
Section,  
Agudath Israel of Chicago

#### FOR EMIL ARMIN SHOW

I read with interest Harold Hayden's April 25 article: "That thorny matter of neglect of local artists." It is about time we break the cycle, plaguing artists since time immemorial, and recognize our local creative artists. Also, I was especially interested in Hayden's suggestion that the Art Institute give retrospective shows to long time local artists, while they are living.

Emil Armin, one of the artists Hayden suggested, is such a man. He has devoted over 60 years to his art, most of them spent in Chicago. Even at the ripe age of 88, he is still evolving new horizons in technique—especially new means of painting light. His universe, localized in Chicago for most of his many years, adds many shades of color and interest to our stimulating city. Armin paints with a joyousness that is so satisfying in the pathological age. We need his encouragement and humor to renew our faith in our world.

The Art Institute should be proud to share Armin with the world, as he has contributed a legacy of art to our wonderful city.

Helen Jacobson

#### PRAISES SHERIFF, DEPUTY

Sometime last December, when Sheriff Richard Elrod announced he was appointing Lawrence Chambers, a black lawyer, as his chief deputy, I took a "wait and see" attitude. Now I am sure the new sheriff made an excellent choice. The consensus among most lawyers I work with is that the sheriff and the chief deputy are doing a fantastic job.

In my opinion, in the future whomever is chief deputy for Cook County should be an attorney. The fact that both these men are lawyers qualifies them even more.

Clinton O. Sims,  
Attorney at Law

[From WAIT Radio, Chicago, Ill.]

#### HARRY HOMEWOOD'S ANALYSIS, APRIL 26 AND 27, 1971—1700 AND 0900

Representative Harold Katz—a Democrat of Glencoe—has a bill for the Legislature that would put Illinois on daylight saving time for the entire year—rather than just for the summer months.

There are a number of arguments for having Illinois clocks set to one time all year long—instead of shifting in spring and fall to earlier and later times. There are also a number of arguments against putting Illinois on daylight savings time for the entire year.

Those who argue for all-year long daylight savings time make the point that an extra hour of daylight in the winter months would reduce auto accidents. That is a moot point. Not all traffic accident experts are in accord with that concept at all. The point is also made that with daylight savings time there

would be one less hour of darkness in which robbers might operate. That is a fallacy—the robber doesn't concern himself with the time by a clock—he works during the dark and cutting one hour off his working time isn't going to hurt the robber.

The argument for year-round daylight time also says it would give children an extra hour to play out of doors. Fine—in the summer. But what does it mean in the winter when the thermometer is down—well down—below freezing?

Those who are against daylight savings time year round also have some points.

The most important of these—I would think—is if there were daylight savings time year round small children would be going off to school in the pitch dark during the winter months. The idea of small children crossing busy streets—and of equally small children acting as safety patrol guards in the total dark is something to worry about.

The Chicago branch of the Parent Teacher's Association says quite frankly that it has not considered this aspect of the bill that Mr. Katz is introducing but it may well consider it at the next PTA meeting—in May—if enough parents are interested. One would assume that enough parents will be interested if they consider the prospect of children walking the streets and crossing busy intersections in the total dark of early morning.

Traditionally—the opposition to daylight savings time—summer or winter—has come from farmers who dislike changing their hours twice a year. But the issue of daylight savings time year round now is of pertinent interest to urban dwellers as well—especially parents—who have small children who would be going to school in the dark every morning of the winter months.

On the whole—it would seem the arguments against daylight savings time—year round—seem far more cogent than those for it.

Senator STEVENSON. The committee has a letter from "Discover American Travel Organization, Inc." in support of daylight saving time.

[The letter follows:]

DISCOVER AMERICA TRAVEL ORGANIZATIONS, INC.,  
Washington, D.O., November 8, 1973.

Hon. WARREN G. MAGNUSON,  
Chairman,  
Committee on Commerce,  
U.S. Senate,  
Washington, D.C.

DEAR SENATOR MAGNUSON: As president of the national organization of the United States travel industry, let me voice my support of S. 2602 which will be considered tomorrow during hearings on daylight saving time.

Discover America Travel Organizations has conducted a poll among a broad segment of the United States travel industry, including associations representing accommodations and all modes of transportation, as well as individual attractions, travel agents, tour brokers and state and local travel promotion departments, with full endorsement of year-round daylight saving time.

While this measure could expand tourism and travel, our \$50 billion-plus industry feels that it is a positive step toward national recognition of energy conservation. I note with interest that President Richard Nixon has included this measure as part of his proposed energy conservation plan, and we in the travel industry feel that your Committee, by positive action on S. 2602, can alert the nation to better use of available energy resources, as well as effect a practical step to conserve energy.

The travel industry has continually cooperated with all levels of government on the question of energy. We look forward to assisting you and your Committee in any way possible in this bill to provide daylight saving time on a year-round basis.

Sincerely,  
WILLIAM D. TOOHEY, President.

Enclosure.

**DISCOVER AMERICA TRAVEL ORGANIZATIONS, INC.,  
Washington, D.C.**

**RELEASE FOR THURSDAY, NOVEMBER 8, 1978**

**WASHINGTON, D.C.**—The president of the national organization of the United States travel industry today voiced his support for year-round daylight saving time.

William D. Toohey, President of Discover America Travel Organizations, Inc., in a letter to Senator Warren G. Magnuson (D-Washington) Chairman of the Committee on Commerce which begins hearings tomorrow on bills providing for daylight saving time, stated his support for a bill introduced by Senator Adlai E. Stevenson, III (S. 2602) to provide for the observance of year-round daylight saving time.

Toohey wrote, "Discover America Travel Organizations has conducted a poll among a broad segment of the United States travel industry, including associations representing accommodations and all modes of transportation, as well as individual attractions, travel agents, tour brokers, and state and local travel promotion departments, with full endorsement of year-round daylight saving time.

"While this measure could expand tourism and travel, our \$50 billion-plus industry feels that it is a positive step toward national recognition of energy conservation. I note with interest that President Richard Nixon has included this measure as part of his energy conservation plan, and we in the travel industry feel that your Committee, by positive action on S. 2602, can alert the nation to better use of available energy resources, as well as effect a practical step to conserve energy.

"The travel industry has continually cooperated with all levels of government on the question of energy. We look forward to assisting you and your Committee in any way possible on this bill to provide daylight saving time on a year-round basis."

Senator STEVENSON. The committee has another statement from Mr. Don Rose, editor and copublisher of "Hyde Park-Kenwood Voice," in opposition to year-round daylight saving time.

[The statement follows:]

**STATEMENT OF DON ROSE, EDITOR AND CO-PUBLISHER, HYDE PARK-KENWOOD VOICES**

My name is Don Rose. I am the editor and co-publisher of the Hyde Park-Kenwood Voices, a monthly newspaper of social and political commentary that circulates in the Chicago area. I am a regular contributor to Chicago's four daily newspapers and a frequent correspondent of The Nation, the national political weekly. I am also regularly involved in public affairs programming for local radio in Chicago involving principally urban minority and local community organizations.

The issue of year-round daylight saving time has come to my attention in the past, usually as the result of one or more of our state legislators' sponsoring such a bill. It is one of those issues that many people find immediately attractive for a host of reasons, but has in my view serious flaws that indeed border on the dangerous.

The introduction of federal legislation by one of my home state's senators—with the primary motivation stated as energy conservation—has initiated substantial conversation and concern on the issue among many of the community organizations with which I deal in the course of my various journalistic endeavors.

I have at the same time become annoyed that the issue has so frequently been posed as one with broad urban support and opposition only in the rural areas among farmers, and so forth.

This is decidedly not the case, and I wish to spell out some of the concerns that makes this issue impinge substantially upon our cities; especially upon the inner-city communities such as the one in which I reside and in which a substantial portion of my newspaper's circulation is based.

It is certainly no news to the members of this committee that urban crime—especially inner-city crime—is perhaps the most compelling and anxiety-provoking topic in every major metropolitan center in the nation. And while I recognize that the fear of crime is often more exaggerated in some communities than the facts substantiate, it is none the less a real issue.

The national statistics tell us of the major crimes of violence: rape, murder, mugging and related strong-arm felonies. Often overlooked in these statistics is the high incidence of crimes against school children. These are sometimes simple indignities generated by older children, sometimes related to the activities of organized gangs that prey on children of all ages, and sometimes individual acts perpetrated by individual criminals.

These are performed while youngsters are on the way to school, returning from school and often in the schoolyard. They are performed usually in the daylight hours, boldly and largely in view of others.

Can you imagine, then, the potential breeding and performance ground for this kind of crime that would develop if children of all ages were forced to go out in the darkness every day because we toyed with sunrise time during the bleakest and harshest winter months?

Give the bully the cover of darkness and you may have developed a felon. Give the violent gang youth the cover of extra darkness in the morning and there is a potential increase in both the quantity and severity of the felonies to be performed.

Please consider: In Chicago, if Senate Bill 2002 is passed, the latest sunrise would be 8:18 a.m.; Detroit would be 9:02 a.m.; Seattle, 8:57; San Francisco, 8:25; Denver, 8:21; Louisville, 8:59; Topeka, 8:42; Minneapolis, 8:15, and so forth.

In addition to the question of crime on the streets, there are many aspects of traffic safety that could be negatively affected by extra driving in morning twilight. Safety experts with whom I have discussed this matter are by no means sanguine about the matter. The one thing we know is that no substantial studies exist on the traffic safety question under altered daylight savings patterns. It would certainly seem appropriate for very serious consideration on this matter as well as the crime issue before plunging ahead into morning darkness for a theoretical electricity saving.

It has been suggested that a massive local change-over in school hours would solve these problems. Those who recommend this extraordinary action fail to realize they would create an additional burden on those who can afford it least: the working mother. Moving school schedules one or more hours later in the day in order to accommodate to the sunrise would throw the working mother's schedule completely out of synchronization with that of her children. We therefore compound a problem in the course of trying to solve it. In addition, the victims continue to be working people and residents of the inner city, child and adult alike.

Which brings me to perhaps the most serious reservation of all.

We have heard much speculation and propaganda to the effect that there will be a saving in electrical consumption. Yet when one probes this matter, the speculation turns out to be ephemeral. All of the official memoranda from governmental or private agencies I have seen relate a potential saving ranging from a fraction of one per cent to two per cent; yet all recognize the speculative and inconcrete nature of these studies.

The best research, by attorney William Harris, is also the most careful and tentative in making serious claims of electrical energy savings. Harris recognizes there could be a concomitant increase in the use of motor fuels. He points out that a 8 per cent increase in gasoline usage would negate the savings in electrical energy and above that could even result in a net increase rather than decrease in total energy demand.

I am not a scientist and cannot evaluate the matter from that aspect. But as a rational individual it seems to me that we are, if you will pardon the pun, groping in the dark.

There is certainly enough evidence to reach the conclusion that the thrust of this legislation will have a profound effect on the population, as it did in England, causing Parliament to abandon its 8-year venture into winter daylight saving time.

I must then ask how we can consider rushing into this without serious study and adequate scientific evaluation, all in the name of an energy crisis that can be mitigated to far larger degrees by other methods such as rationing and speed limits.

The latter may be less popular politically than the glib adoption of what seems on the surface to be a good idea, but I hope that such will not be the determinant of a national policy with such a serious negative potential for us in urban communities.

Thank you.

Senator STEVENSON. That concludes the hearings.

[Whereupon, at 12:15 p.m., the hearing was adjourned subject to the call of the Chair.]



## ADDITIONAL ARTICLES, LETTERS AND STATEMENTS

YANKEE, INC.,  
Dublin, N.H., October 30, 1973.

Sen. ADLAI E. STEVENSON III,  
New Senate Office Building,  
Washington, D.C.

DEAR SENATOR STEVENSON: You and I met at Harvard Law School and both of us have found our way into political life (I being a State Senator in New Hampshire).

However, my letter to you today is occasioned by your interest in Daylight Saving Time. As Publisher of The Old Farmer's Almanac, I would like to recommend a possible compromise solution which would probably obtain maximum energy saving and also satisfy both the farmer and the housewife.

The problem is that as the days grow shorter, you can save energy by using daylight at the end of the day but, of course, most people would then be forced to get up in the dark and actually arrive at work in the dark. It has to fall at one end or the other. One would think that the business community and industrial plants would save fuel but during this time of year when it is cold and dark, the maintenance men are in before the light comes up and the same amount of heat and light is used regardless. What I am saying is that during the dark period coming to the winter solstice, it is unlikely that you will gain a great deal of energy conservation by using Daylight Saving Time. Furthermore, you will have a great many mothers enraged by making them get up in what would seem the dead of night, whereas, most of the public school children are home by 3:30 p.m. now when it is still light under Eastern Standard Time. Commuters and farmers would also be very angry.

However, we now cut off at the end of October and do not go back to Daylight Saving Time until April 30th. This is where the mistake occurs. Of course the sun rises later than it did in November (by one half hour) but at least there are enough sun hours available to cover most human operations. The exact date of return could be discussed further.

This would mean that you would have half of February and all of March and April at a time when you really would save energy and utilize sunshine. I think this would represent a middle course; would achieve most of the energy saving that you are looking for and finally could be enacted by Congress in 1973 or early 1974 for implementation on February 10, 1974.

If you would like me to come as a witness or to help publicize this idea, I would be most happy to do so. I am taking an extended speaking tour in December and January and I can mention this as a possibility. I am taking the liberty of sending copies of this letter to my two Senators and to Rep. Silvio Conte of Massachusetts, who has expressed a similar interest.

Best regards,

C. R. TROWBRIDGE, *Publisher.*

YANKEE, INC.,  
Dublin, N.H., November 2, 1973.

Sen. ADLAI E. STEVENSON III,  
New Senate Office Building,  
Washington, D.C.

DEAR SENATOR STEVENSON: Following up on my letter of October 30th, I think it should be recognized that there are two sides to the Daylight Saving dispute. I enclose a Concord, N.H. MONITOR editorial of Thursday, November 1st, which states it quite succinctly.

I think we should get moving on this fast and I am waiting for you gentlemen to perhaps combine so that we could have a joint release from The Old

Farmer's Almanac, the New Hampshire Senators and the Representative from Massachusetts who has been so interested in this matter.

Best regards,

C. R. TROWBRIDGE, *Publisher.*

[From the (N.H.) Monitor, Thursday, Nov. 1, 1973]

### TWO SIDES TO DAYLIGHT SAVING

Last week Gov. Thomson sought to continue Daylight Saving Time throughout the year. He discovered he didn't have authority to do it.

But the idea is getting ever wider circulation, and bills in Congress toward this end are getting more serious consideration this year than we have noted in the past.

It is not, as its proponents suggest, an idea that has all virtue on its side. It depends where you want your darkness.

Daylight Saving Time has the effect of postponing sundown. Most persons would arrive home from work with an hour or 90 minutes of daylight still left in the day.

Eastern Standard Time, which coincides more precisely with the apparent passage of the sun over the local meridian, shifts that daylight hour to morning, and long has been favored by early-rising farmers.

But another factor has entered into modern considerations. Mothers who send their offspring to school in the morning hours would rather do it in daylight than morning dusk, particularly in winter.

The hazard for children would be considerable on heavily-traveled secondary roads that lack sidewalks and are narrowed by plowed snow. Vehicular traffic bound for work creates the danger.

And it is not unusual for a child to have to leave his home before 7:30 a.m. to catch a school bus. In winter months, the sun would not have risen by this time if Daylight Saving Time were in effect.

Another factor that has been cited this year is energy consumption. The theory is that lights would not have to be turned on so early at night.

But domestic energy consumption is only a fraction of total electricity consumed. The bulk of energy consumption is industrial. It makes little difference whether it's in the morning or the evening.

NEW YORK CHAMBER OF COMMERCE AND INDUSTRY,  
New York, N.Y., November 5, 1973.

HON. WARREN J. MAGNUSON,  
*Chairman,*  
*Senate Committee on Commerce,*  
*Washington, D.C.*

DEAR SENATOR MAGNUSON: On behalf of the membership of our Chamber may I respectfully urge your support of the following bills—S.2602 Stevenson (D., Ill.) and S.1260 Pell (D., R.I.). Each would extend the period in which daylight savings time is in effect to throughout the year.

Strong support has developed in the business community for this proposal which would help alleviate the drain on electrical energy by extending daylight hours in the afternoon during the fall and winter months. This rescheduling of hours of light is considered also as a deterrent to crime.

Very truly yours,

THOMAS N. STAINBACK, *President*

**OFFICE OF THE MAYOR,  
INTERDEPARTMENTAL COMMITTEE ON PUBLIC UTILITIES,  
New York, N.Y., November 9, 1973.**

**Senator WARREN G. MAGNUSON,  
Chairman,  
Senate Committee on Conservation,  
Senate Office Building,  
Washington, D.C.**

**DEAR SENATOR:** Upon completion of your hearings and deliberations on the conservation of energy, it is urged that you propose the establishment of daylight saving time the year round.

If this were put into effect, you will note from the table below that employees leaving their work places at 5:00 P.M. in New York City would never have to do so when it is dark.

**TOTAL DAYS WITH LIGHT AT 5 p.m. (1972)**

Months	EST	DST
November.....	0	30
December.....	0	31
January.....	14	31
February.....	28	28
March.....	31	31

With daylight saving, employees would leave work while it is still light on 80 days (2 additional days in October) than under Eastern Standard Time.

The continuation of daylight saving time is estimated to save about 2.8 million gallons of oil in generating the increased need for electricity in the evening hours and would be a significant crime preventive measure.

Your sponsorship and active support for legislation for daylight saving time the year round would, therefore, be extremely helpful in not only conserving energy but it would also be greatly appreciated by the public for reasons of safety.

Sincerely,

**MILTON MUSICUS, Chairman.**

**DAYTIME BROADCASTERS ASSOCIATION,  
Washington, D.C., November 12, 1973.**

**Sen. WARREN G. MAGNUSON,  
Chairman,  
U.S. Senate, Commerce Committee,  
Washington, D.C.**

**DEAR SENATOR:** Hundreds of Radio Broadcast stations throughout the USA, licensed to operate from sunrise to sunset, are very much opposed to the adoption of year-round Daylight Saving time because of the inconvenience and disservice it will cause to millions of U.S. citizens who depend upon local daytime only stations for their local services.

We regret that we have not had the opportunity to appear in person before your committee to express our opposition to "Year-Round" Daylight Saving Time. We sincerely that you will consider the 8 major points in our opposition as listed on the attached sheet and that you will make it a part of your record in the hearings which I understand you are now conducting.

Sincerely,

**RAY LIVESAY, Chairman.**

Enclosure.

**YEAR-ROUND DAYLIGHT SAVING TIME**

1. This would be a terrible dis-service to 2300 Daytime RADIO Broadcast stations and to the millions of people they serve throughout the USA.

2. These 2300 Daytime Stations are licensed by the FCC to serve with their full power from sunrise to sunset. Some have Pre-Sunrise Authority (PSA) but this is usually at a much lesser power than their regular licensed power.

3. The early morning hour is much more valuable and important to the listener than the hour just before sunset.

4. 1000 of these 2300 Daytime only stations are the one and only station serving their respective community *locally*. LOCAL broadcasts are vital in the early morning in the northern half of the USA, especially during winter months when snow causes school closings and LOCAL Radio is the **ONLY** way to get the word out to the people of school bus cancellations and etc.

5. If year-round Daylight Time is adopted, many Daytime stations cannot sign-on (in northern latitudes) until as late as 9:00 AM local DST. Even if they have a PSA they will have to operate from 6:00 AM to 9:00 AM with extremely low power.

6. Economically, the adoption of extended DST will reduce Daytime Station's overall revenue from advertising by as much as 15%. This could throw many Daytime Stations into loss operations.

7. Extended DST will not conserve electrical energy on the part of Daytime Broadcast stations because they operate from Sunrise to Sunset with the early morning hour being by far, the most important. Those Daytime stations with PSAs to start broadcasting with low power at 6:00 AM LOCAL time to sunrise, will actually use more electrical energy because they will be, in effect, signing-on an hour earlier.

8. Energy is conserved in summer months with DST because of the long Daylight hours but this is not the situation in the short daylight hours of the winter months.

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AIR TRANSPORT ASSOCIATION OF AMERICA,  
Washington, D. C. November 13, 1973.

Re Year-Round Daylight Savings Time Legislation.

Hon. WARREN G. MAGNUSON,  
*Chairman, Senate Commerce Committee,*  
*U.S. Senate,*  
*Washington, D.C.*

DEAR MR. CHAIRMAN: The Air Transport Association submits this letter on behalf of the scheduled airlines of the United States.

In the interest of energy conservation the airlines support legislation for year-round daylight savings time on a nationwide basis. We believe that the legislation enacted by the Congress and on which the Commerce Committee took the lead in 1966 to establish a uniform system of time throughout the United States has been beneficial to the country. In addition, it has been exceedingly helpful to the traveling public in terms of airline scheduling and time tables through its elimination of the miscellaneous time zones which had been established in the years prior to 1966.

In considering the establishment of daylight savings time on a year-round basis, the airlines urge the Committee to assure that the legislation apply to the entire United States without exception and be implemented throughout the country simultaneously.

We understand that the Committee is considering an effective date which will permit time for implementation and adequate public notice so as to minimize inconvenience. This will also be most helpful to the airlines which must republish schedules.

We appreciate the opportunity to express our views on this important legislation.

Sincerely,

PAUL R. IGNATIUS,

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SOUTHERN CALIFORNIA EDISON CO.,  
Washington, D.C., November 13, 1973.

Hon. WARREN G. MAGNUSON,  
*Chairman,*  
*Committee on Commerce,*  
*U.S. Senate,*  
*Washington, D.C.*

DEAR MR. CHAIRMAN: Southern California Edison Company (Edison) is pleased to present its comments concerning the proposed legislation to enact year-round Daylight Savings Time.

Edison is a California corporation which generates and distributes electric

energy to meet the needs of over seven and one-half million people in Central and Southern California. At the end of 1972, the Edison system generating capacity totaled approximately 12,500,000 kW, of which approximately 8,700,000 kW were from gas and oil fueled steam electric generating plants. These plants consumed approximately 24,000,000 barrels of oil fuel in 1972. It is currently estimated that Edison's customers will require an additional 4,731,000 kW of generating capacity for the remainder of the 1970's and another 15,000,000 kW in the 1980's.

As an example of the electric utility industry's increasing dependency on oil to fuel its electric generating plants, Edison consumed approximately 9,700,000 barrels of oil in 1969, but we anticipate that we will be required to use over 60,000,000 barrels of oil in 1974 and in excess of 100,000,000 barrels per year by the end of this decade.

This nation is facing an energy crisis. This crisis has resulted, in a significant respect, from a shortage of acceptable fuel for electric generating plants. The public's demand for electric energy is increasing at a faster rate than the electric utility industry's ability to increase supply, not only because of a shortage of fuel, but also the difficulty in obtaining permits and licenses to construct new generating plants.

Edison is aware of, and is responding to, the need for conserving energy. We recognize that an adequate and reliable energy supply is essential for our national welfare. Edison, as well as other electric utility companies, is greatly concerned about the increasing prospect of critical power shortages during peak load periods.

Edison fully supports the objectives enunciated in this proposed legislation. Daylight Savings Time would result in a significant reduction of demand for electric energy during peak load periods, thereby increasing the reliability of electric service. Further, any reduction in electric energy demand over the period affected by passage of this bill would result in a reduction in electric utility fuel consumption.

This would be desirable, not only to reduce the demand for scarce low-sulfur oil supplies, but it would also result in a corresponding reduction in the cost impact on the electric utility industry's customers of recent dramatic increases in the price of fuel oil. We estimate that Edison's requirements for oil to fuel its generating plants would be reduced by approximately 546,000 barrels over the period of November, 1973, through April, 1974, under Daylight Savings Time.

We respectfully request that this letter be made a part of your record on this matter.

Very truly yours,

ALAN M. NEDRY.

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TRANSPORTATION ASSOCIATION OF AMERICA,  
Washington, D. C., November 13, 1973.

HON. WARREN G. MAGNUSON,  
Chairman,  
Senate Commerce Committee,  
Washington, D.C.

DEAR CHAIRMAN MAGNUSON: As you will recall, the Transportation Association of America has for many years taken an active interest in daylight saving time, and it played an instrumental role in generating support for the Uniform Time Act of 1966. We also have expressed opposition, in several instances since passage of this Act, to various legislative proposals that would, in effect, have largely nullified its purposes.

We are pleased to see a proposal to apply daylight saving time throughout the year as a means of helping to ease our energy problem. Such a proposal is very much in line with the uniformity concept advocated by TAA, and the savings in scarce energy should be most beneficial to all. The transportation industry will certainly be called upon to fill much of the demand for transport services that will otherwise not be met if fuel rationing becomes a necessity. Without the adoption of constructive measures, such as the daylight saving time proposal, these carriers will not be able to fill this gap.

We urge favorable action by your Committee on the all-year nationwide daylight saving time proposal, but we emphasize the need for its uniformity to

avoid the serious disruptions to transport services that differing time changes have caused in the past.

Sincerely,

PAUL J. TIERNEY.

AMERICAN HOTEL & MOTEL ASSOCIATION,  
Washington, D. C., November 15, 1973.

HON. WARREN G. MAGNUSON,  
Chairman,  
Committee on Commerce,  
New Senate Office Building,  
Washington, D.C.

DEAR MR. CHAIRMAN: The American Hotel & Motel Association is a federation of hotel and motel associations located in the fifty states, the District of Columbia, Puerto Rico, and the Virgin Islands, having a membership in excess of 8,000 hotels and motels containing in excess of 900,000 rentable rooms. The American Hotel & Motel Association maintains offices at 888 Seventh Avenue, New York City, and at 777—14th Street, N.W., Washington, D.C.

We wish to use this opportunity to express the support of the hotel-motel industry for the extension of Daylight Saving Time year round.

It is our belief, after discussing this issue with industry people throughout the Nation, that a number of substantive benefits besides the obvious savings in the Nation's fuel supply can be derived by the extension of Daylight Savings Time.

Among these are:

1. *Greater employee morale*—Many of our employees who work in urban areas and leave work presently around dusk are susceptible to criminal attacks. Therefore, they very much favor the additional light Daylight-Savings Time would afford them.

2. *Greater employee productivity*—It has been our experience that workers become more aware of "quitting time" as the daylight hours fade away. This results in a lack of concentration on the job and a greater concern to get home. We believe the additional light hours will help to increase worker productivity.

3. *Increased shopping and socialization*—Studies conducted in certain cities have reflected a marked decrease in the shopping habits of people as dusk approaches during the winter months. It is our belief that this is caused by a preoccupation most people have with getting home "before dark." We feel that Daylight Savings Time in the winter can provide shoppers with the psychological lift to continue shopping longer hours and perhaps even stay out and enjoy a meal with their spouse who may be working in the vicinity.

In conclusion, we would like to point out that we wholeheartedly agree with the remark you made at the outset of these hearings when you said, "I personally believe that every American must look at his own individual energy consumption patterns and begin to correct wasteful and unnecessary energy consumption where possible."

AH&MA has been doing just what you recommended for a number of months by supplying its membership with important energy conservation materials which we enclose here for your perusal.

Sincerely,

ALBERT L. McDERMOTT,  
Washington Representative.

Enclosure.

#### "OPERATIONS NECESSARY": HOW TO CONSERVE ELECTRIC ENERGY

(By Les Thomas, AH&MA Engineering Consultant)

Here are some timely tips for doing your share in achieving the nation's conservation goals and at the same time reducing electric utility costs. In considering any conservation measures you will, of course, want to keep in mind any locally applicable laws.

The suggestions offered here will help you conserve electricity both on the long-term basis and during acute shortages.

Use fluorescent lighting where possible. You get the same light for one third the wattage.

Consider mercury lamps for parking lots and throughout the grounds. They are inexpensive to operate.

Use low voltage (12 volts) in swimming pools for savings and safety.

Consider time clocks or photocells that automatically turn on and off for:

Signs

Exterior lights on grounds

Exterior building lights

Heaters and warmers

Air conditioning

Water pumps

Bathroom exhaust fans

Kitchen exhaust fans

For nighttime corridor lighting, consider: Alternate light switching, using time clocks, automatic transformer dimming.

Replace resistance-type dimmers with transformer type.

Control electric infra-red heaters in baths with twist-on timers rather than toggle switch.

Investigate the feasibility of short time (twist-on) timers controlling lights in storeroom and walk-in boxes or other time-use areas where light is apt to be left on indefinitely.

Turn off heavy duty equipment when not needed. You can save more by turning off one 50 H.P. motor than by turning off *four hundred* 100-watt light bulbs.

Turn off refrigerators and ice-makers used for special occasions when not in use.

Turn off lights when functions are completed. Mark panels so cleaners can turn on required lights only.

Turn off elevator generators when not in use.

Reduce speed of motors for light service duty. Wattage consumed is proportioned to the speed cubed. For example, *if you operate a fan or pump at half speed you use one-eighth as much power as at full speed.*

Consider where you would save by replacing single speed motors with two-speed motors.

To cut wattage consumed by single speed motors, reduce the speed (motor pulley) when full speed is not required.

Be certain that wire size on new installations is more than adequate to avoid overloading and resultant loss of electricity as heat.

Enlist employees' aid in turning off unused equipment and avoiding use of a 150 watt bulb in a socket requiring a 75 watt bulb.

Establish a standard room set up that spells out the proper size bulb for each type of lamp or fixture.

Establish policy for turning off lights not in use.

Check the efficiency of your air conditioning compressors—water temperatures in and out of condensers and evaporators against design specifications, and amperage on pump motors against specifications.

Examine coils in room fan coil units and large air handling units. If coils are dirty, you are getting less heat transfer with the result that the fan has to run longer and uses more electricity.

Examine filters on room fan coil units and large air handling units. If they are dirty, you are getting too little air and using too much electricity.

Instruct employees to turn guest room thermostats to a specified minimum position.

If fan coils are without thermostat, turn off fans to avoid excessive heating or cooling, and instruct employees to ask occupants if temperature is satisfactory and to act accordingly.

Examine the kitchen thoroughly to assure that—

Exhaust fans are shut off when kitchen is not in use

Kitchen equipment not needed for the period is turned off, and that applies particularly to ranges

Electric booster heaters on dishwashers are shut off when the kitchen is closed

Minor left-overs are consolidated in one refrigerator so one box rather than several can be kept running

Coils in walk-in and reach-in refrigerators are not caked with ice (which cuts the efficiency of the compressor)  
 Gaskets in refrigerator door are not leaking  
 Walk-in refrigerators are equipped with pilot lights on light switches to make it easy for employees to see whether lights have been left on  
 Check lists in future bulletins will cover Steam (or Fuel) Conservation and Water Conservation.

FEDERAL COMMUNICATIONS COMMISSION,  
 Washington, D.C., November 24, 1973.

HON. WARREN G. MAGNUSON,  
 Chairman, Committee on Commerce,  
 U.S. Senate,  
 Washington, D.C.

DEAR MR. CHAIRMAN: This is to supplement my letter of November 13, concerning the effects of year-round daylight saving time on certain AM broadcast stations licensed to operate daytime only.

Committee staff was previously supplied with a Public Notice of the Commission's November 14 instructions to its staff to prepare, on an expedited basis, a Notice of Inquiry and Proposed Rule Making designed to consider possible relief for daytime only stations and to report back to the Commission by November 21. A copy of that instruction to the staff is enclosed.

The Commission met on November 21 and again today and discussed the matter further. As a result of those further discussions, I would like to make a few additional observations.

The Commission continues to believe the language of Senate Report 93-504 will be helpful to us in our efforts to grant some relief to certain daytime only broadcast stations which, under the pending legislation, would otherwise begin operations one hour later in the morning.

It is the Commission's intention to initiate a general rule making proceeding promptly upon congressional approval of year-round daylight saving time. Because rule making proceedings can be time consuming, we also contemplate granting appropriate interim relief. A November 23 Public Notice to this effect is also enclosed.

Although, as previously indicated, we do not consider it necessary to have specific language in the bill to deal with the daytime broadcast situation in the context of a general rule making proceeding, inclusion of appropriate statutory language specifically authorizing the Commission to grant interim relief pending completion of general rule making would be helpful. This would obviate any problems that might otherwise arise under section 316 of the Communications Act with respect to any exercise of interim authority.

If statutory language is included, it could be as a new section 5 at page 6, line 9 of S. 2702 to add the phrase "or by interim action pending such general rules" following "general rules" in the first sentence and the words "or interim action" after the phrase "general rules" in the second sentence of section 5 of H.R. 11824 as reported.

Additionally, deletion of the phrase "which are not eligible for pre-sunrise operating authority" from the first sentence of section 5 of H.R. 11824 as reported would enable the Commission to grant interim relief not only to those AM standard broadcast stations not presently eligible for pre-sunrise operating authority but also to other AM stations is presently eligible for, but not operating pursuant to, pre-sunrise operating authority or operating with severely restricted pre-sunrise facilities.

Thus, appropriate language could read as follows:

"Sec. 5 Notwithstanding any other law or any regulation issued under any such law, the Federal Communications Commission shall, consistent with any existing treaty or other agreement, make such adjustment by general rules, or by interim action pending such general rules, to permit daytime standard amplitude modulation broadcast stations to operate not in excess of one hour prior to local sunrise, as may be consistent with the public interest, including the public's interest in receiving interference-free service. Such general rules, or interim action, may include variances with respect to operating power and other technical operating characteristics. Subsequent to the adoption of such general rules, they may be varied with respect to particular stations and areas because of the exigencies in each case."

The Commission shall, of course, advise the Committee of whatever further action we take to ease the impact of such legislation on some broadcasters.

This letter was adopted by the Commission November 26, 1978; Commissioners Johnson and H. Rex Lee absent.

By direction of the Commission.

DEAN BURCH, *Chairman.*

#### **PUBLIC NOTICE**

**FEDERAL COMMUNICATIONS COMMISSION,  
Washington, D.C. November 23, 1978.**

#### **IMPACT OF DAYLIGHT SAVING TIME LEGISLATION ON DAYTIME-ONLY STATIONS**

The Commission, on November 14, 1978, issued a public notice announcing that it has instructed the Broadcast Bureau staff to prepare proposed rule revisions to ease the impact of pending Federal daylight savings time legislation on AM stations limited to sunrise to sunset operation.

The Commission has received a draft of proposed rule making from the Broadcast Bureau. Consistent with Congressional action, the Commission is prepared to grant, for the duration of national daylight saving time, appropriate temporary relief and to initiate a rulemaking proceeding to afford relief to daytime-only stations which are presently ineligible for pre-sunrise service authorizations (PSA's), where such action is consistent with treaty commitments, and with due regard to the protection of nighttime services rendered by U.S. clear channel stations during the pre-sunrise hours.

#### **PUBLIC NOTICE**

**FEDERAL COMMUNICATIONS COMMISSION,  
Washington, D.C., November 14, 1978.**

#### **STAFF INSTRUCTIONS ON IMPACT OF DAYLIGHT SAVINGS TIME LEGISLATION**

The Federal Communications Commission today instructed its staff to prepare on an expedited basis a Notice of Inquiry and Proposed Rule Making, raising for immediate consideration any and all measures that might ameliorate the impact on daylight-only standard broadcast stations of legislation extending daylight savings time throughout the year.

The Commission staff was directed to report back to the full Commission no later than Wednesday, November 21, 1978.

#### **STATEMENT OF HON. DAVID M. BARTLEY, STATE REPRESENTATIVE FROM MASSACHUSETTS**

Mr. Chairman, members of the committee: I am David M. Bartley, speaker of the house of representatives of the commonwealth of Massachusetts. I will speak in favor of Senate bill 1260, 2568 and 2602, all of which provide for the extension of daylight savings time through the winter months.

Title 15, section 260, sub (A) of the U.S. Code recognizes the right of an individual State to unilaterally exempt itself from daylight savings time. Yet, subsection (B) has the effect of specifically prohibiting States from doing the converse. At the present time, there are several States in our country which do not observe daylight savings time at all; and only (Indiana) observes it in selected counties. Thusly, the Uniform Time Act of 1966 notwithstanding, time in the United States is *not* uniform.

There is nothing sacred about standard time. Throughout the world, there are countries which add 15, 30 or even 45 minutes to the "standard" time of their respective zones.

Precedents have been set for year-round daylight saving time-principally during the two world wars. The Congress and Presidents Wilson and Roosevelt responded at that time to the need for an extra hour of afternoon daylight. Parts of Europe turned their clocks ahead two hours during both wars. (England had success with year-round daylight saving time between 1968 and 1971?) (But gave it up because of northern farmer opposition).

As a result of the favorable experience of year-round daylight saving time in World War I, Massachusetts, with no Federal guidelines, passed legislation in 1920 to advance the clock one hour between March and October. The dates were changed twice until, in 1954, we observed daylight saving time from April to October. More than ten years before the Federal Government acted in 1966, all the States in the northeast had unilaterally passed uniform laws for changing their times.

Today, we in the northeast face an energy crisis of ever increasing magnitude, everyday our newspapers predict greater and greater shortages of oil, a form of energy on which New England is highly dependent. The world and national political situation is fraught with uncertainty.

Some positive action is needed, information filtering through the media from the private utility companies' advertisements indicates that any measure that will save even small amounts of energy should be implemented. Recommended courses of action range from lowering thermostats a few degrees to closing our schools for the full month of January.

Surely turning our clocks ahead one hour is less inconvenient than these other alternatives.

There is, I believe convincing evidence that adoption of year-round daylight saving time will save a small, though significant, percentage of our energy needs this winter.

Peak usage of electricity occurs at dusk. Daylight saving time during the winter months would dissipate this peak usage, which is very inefficient and therefore more costly to produce than the same number of kilowatts at other times of the day.

Thus, even though our mornings would be darker, the total use of electricity would decrease—some experts believe by as much as two percent.

In World War II, the Office of Production Management estimated that year-round daylight saving time saved almost 1% of our electrical requirements.

Much of our electricity in the commonwealth is generated by oil. Boston Edison, our largest electrical utility, has told me they would save 30 to 50 thousand barrels of oil this winter if this program were adopted. This constitutes approximately one day's quota.

Aside from its absolute energy conservation, potential the extension of daylight saving time would have important ancillary effects:

The average commuter would be traveling during the daylight in the evenings. The occurrence of motor vehicle traffic accidents at dusk is more than twice that of the morning hours.

School children would have the advantage of an extra hour of daylight in the afternoon for leisure and school activities. They would be twice as safe as waiting for a morning bus in semi-darkness as they are now in the afternoon. Child molestation may decrease.

Not the least of all, the average citizen would enjoy a later sunset. The public response to my office on this issue has been overwhelmingly favorable. The Boston Globe and our NBC affiliate radio station have editorialized in favor. Last year, even *Time Magazine* endorsed this measure.

The New England Regional Commission, in a study completed last week of the New England States' response to the energy deficit, recommended year-round daylight saving time as a key method of energy conservation.

Mr. Chairman, the Massachusetts house is convinced of the merits of this proposal. Last week, the chairman of our committee on Government regulations, Rep. Robert B. Ambler, drafted a bill to put Massachusetts on daylight saving time indefinitely, effective December 1 of this year. Last Thursday, this bill passed our 240 member house by an overwhelming vote of 215 to 7.

Two weeks ago, I asked our Republican Governor, Francis W. Sargent, to call an emergency meeting of the New England Governor's conference to consider regional action on this proposal. His response has been to put this matter on the agenda of their next regularly scheduled meeting of November 15.

I have personally contacted other New England State legislatures on this matter.

Mr. Chairman, New England can not afford to waste time at this late date. Some of our people have already been denied oil deliveries; some contracts for schools and Government oil needs have not received one bid.

We are mindful that unilateral action on our part would be illegal unless you change the U.S. Code by means of the bills before you today.

Yet, it has been our experience lately that New England must speak out to a disproportionate degree in order for the present administration to respond to our plight.

The mass, house has gone on record in favor a positive, painless was to lessen the impact of the impending energy shortage.

I am hopeful that the congress, under your initiative and guidance will do the same.

Thank you.

#### *Added comments*

1. The agency with jurisdiction for the uniform Time Act has no interest in fuel/energy conservation.

2. Ben Franklin said, "daylight savings time in France would save 96,000,000 candles if Parisian shops would open an hour earlier in the winter."

3. Bible readings say, "The meek shall inherit the earth. How can they if the oil moguls already own it?"

#### **STATEMENT OF HON. BILL NICHOLS, STATE REPRESENTATIVE FROM ALABAMA**

Mr. Chairman, I would like to thank the Committee for this opportunity to speak in favor of Senator Stevenson's S. 2602 calling for twelve month daylight savings time for the United States.

America faces one of the greatest peacetime crisis in our nation's history. Without fuel to run our factories, heat our homes, guide our navel vessels or fuel our military aircraft we will face a very drastic situation. At this time, the experts are predicting fuel shortage ranging upward to 20% of the nation's total fuel needs.

This is, in part, due to the embargoes and price increases imposed by the Arab countries during and after the recent Middle East War. This unscrupulous action has left the United States almost high and dry in energy reserves and looking for new fuel sources.

America must prove to the world that she will not be intimidated by the blackmail tactics of the embargoes of fuel oil from foreign nations. We must join hands as a nation and work together in a nationwide effort to conserve energy.

Yet this fuel crisis is very real and measures such as twelve month daylight savings time will help to save nationally upward to three percent of our total energy supply. This amount coupled with other measures will significantly help in our energy conservation efforts. I urge the committee to unanimously pass this legislation to show the American people and to demonstrate to the world that this Congress is willing to try means of conservation that are useful and helpful in saving energy and endeavor to genuinely ease the fuel shortages in the United States.

#### **STATEMENT OF JOHN E. FRANKS, PRESIDENT, FRANKS BROADCASTING CO., INC.**

Mr. Chairman and members of the Committee. I am John E. Franks, President and sole stockholder of Franks Broadcasting Co., Inc., which is licensee of Standard Broadcast Station WHIM in Providence, Rhode Island. I greatly appreciate this opportunity to present my statement in connection with proposed amendments to the Uniform Time Act of 1966 to provide for Daylight Savings Time on a year round basis as part of the program designed to deal with our energy crisis.

I am not here to argue against any of the emergency measures proposed to assist in the conservation of energy including the extension of Daylight Savings Time to the winter months. However, I do wish to impress upon this Committee the problem this will pose for AM radio stations, especially those authorized to operate from sunrise to sunset, and their listeners. Under the rules of the FCC, the regular time of operation for all AM radio stations is specified in the station license with the exception of presunrise service authority which is granted by a specific Commission rule—Section 73.99.

The difficulty is caused by the fact that the sign-on times for daytime AM stations, and for the changeover to daytime facilities in the case of unlimited

time stations or stations operating with presunrise authority, is expressed in terms of Eastern Standard, or non-advanced, Time. While this does not present any particular problem during the regular months of Daylight Savings Time, it will become critical when Daylight Savings Time is extended into winter. For example, the license for WHIM, which is geared to sunrise in Providence, specifies a 4:15 AM Local Standard Time sign-on in July. Although this is 5:15 AM Daylight Savings Time, it is certainly early enough to provide service during the morning hours when radio provides, perhaps, its most important programming. However, in January the license for WHIM specifies at 7:15 AM Local Standard Time sign on, that is, 8:15 AM Daylight Savings Time.

I urge Congress, therefore, to include a provision that the emergency extension of daylight savings time will not affect the licensed sign-on time of AM radio stations.

The critical need for presunrise operation is something in which Congress has historically shown an interest. Indeed, the House of Representatives passed H.R. 4749 in 1962 to provide for presunrise operation for certain standard broadcast stations. As stated in the Report accompanying H.R. 4749 at page 2:

"The principal purpose of the legislation is to make available to many persons in the United States before sunrise in wintertime vitally needed radio programs furnishing local news and information concerning, among other vital matters, local weather and driving conditions; local school, civic, and charitable activities; local agricultural market information; and plant openings and closings."

After rejecting several alternative proposals, the FCC adopted the presunrise service authority rule in 1967. Report and Order in Docket No. 14419, 8 FCC 2d 606. While this decision recognized the need for local early morning service, its provisions do not include all daytime only stations. Some stations are excluded because of foreign treaties and agreements—something which obviously cannot be considered in this emergency legislation. There are several hundred stations, however, which do not qualify for presunrise operation and therefore operate from sunrise to sunset. Extension of Daylight Savings Time will penalize these stations and their listeners unless Congress provides appropriate relief.

It is interesting to note that the Commission has already recognized this very problem. In 1968, the Commission modified its presunrise authority rule to specify sign-on at "6 AM local time" instead of "6 AM local standard time". It is interesting to note that the Commission premised its decision on the need for local service and the importance of this morning "drive-time" for radio station revenues. Even more importantly, the Commission concluded that this early morning relief is most critical during the winter months when the need for local service is greatest due to adverse weather conditions, etc. Unfortunately, winter, due to the later sunrise, is also the time of year when the lack of presunrise authority will be most detrimental to daytime radio stations.

This Committee is faced with the national need for emergency legislation to conserve energy. I strongly urge that you include language to conserve for millions of Americans the existing radio service they are receiving. Regardless of when the sun rises, the listener will still get up at the same clock hour and expect to receive the same local news, school closing information, traffic reports, and other basic information services.

I believe that the Commission already has power to authorize AM stations to sign-on at local time rather than local standard time; however, there may be unreasonable delay before such relief is forthcoming. The most critical months—November through February—are here. Thus, this emergency legislation should include an appropriate provision in order to avoid delay at the time it can be least tolerated.

While there may be some slight interference caused to unlimited time stations, this will be more than compensated for by maintenance of the early morning service provided by daytime stations. Certain degrees of such interference have previously been sanctioned by the Commission when it adopted the presunrise rules and again when that rule was modified to specify local time. Thus, Congress in H.R. 4749 and the FCC in two separate rulemaking proceedings have concluded that the public interest is best served by promoting local morning radio service at the tolerable loss of some increased interference to the secondary service area of another station. For example, WHIM in Provi-

dence must protect stations in Charlotte, North Carolina and Omaha, Nebraska. Indeed, local service designed to serve local needs is the very touchstone of the Communications Act and Commission regulation.

Therefore, I respectfully urge the Committee to include a provision authorizing daytime radio stations to sign-on, and unlimited time stations to use their daytime facilities, at local time instead of local standard time in accordance with the terms of their licenses during the period of emergency Daylight Savings Time.

Thank you.

#### STATEMENT OF ALLEN SAUNDERS, VICE PRESIDENT, RADIO AKRON, INC.

To observe daylight saving time in the winter would seriously impair radio service in the morning to all areas in the United States. As this committee would know, more so than any other on Capitol Hill, the operation of a great many radio stations is keyed to sunrise. Some sign on only then; others, under pre-sunrise authority, operate at minimal power till then; and a great many more maximize power and switch from directional antenna arrays at sunrise. To re-arrange our rising and working habits to include an additional pre-sunrise hour would deprive a great many Americans of their most dependable radio service, at a time when they most depend upon it.

Of course, we agree that these matters rate a lower priority than the Committee's immediate problem; alleviation of the energy crisis. But these are the points we respectfully suggest the committee give careful consideration:

1. Is it a matter of fact that daylight saving time would save energy, or is this a capricious assumption? Our own investigation of the authenticity of this claim has been fruitless. This is not to say that it may not be valid, but we trust the committee will substantiate this claim and subject it to the most careful scrutiny.

2. Should there be any energy saving at all, would it be sufficient to override all of the dissatisfactions and disruptions daylight-saving time brings. We refer especially to:

(a) The danger to school children leaving home each morning in the dark of night.

(b) The possible change of school hours, to the dismay of working inner city mothers whose work schedule is built around the hours during which their children are in school.

(c) The disruption to the lives of our rural population and its possible impact on food production and costs.

3. If, indeed energy saving is involved, would it be uniform in all geographical areas? In states which border the western edge of the time zones, could daylight time actually increase the consumption of energy, rather than conserve it?

It is our position that if all of these factors have been scrutinized with the greatest care, and the committee's decision is that daylight saving time WOULD help alleviate the energy crisis, we should support the change wholeheartedly. But, to help preserve the quality of morning radio service during this emergency, we suggest:

1. The committee, in its role as legislative parent to the Federal Communications Commission, include in the legislation a provision for immediate Commission action to provide whatever relief is possible for radio stations affected:

(a) On a station-by-station basis, if necessary.

(b) Relaxing, on an emergency basis, night-time skywave interference standards when that interference involves only those other stations in the continental United States so protected.

(c) And only for those stations operating in states which adopt emergency daylight saving time, should the legislation rest the option to comply with the individual states.

In times of crisis it becomes imperative that all methods of communication between our peoples be fully viable and fully utilized. It would be ironic if one proposed counter measure to the crisis would inhibit, in any degree, our vital and expanded need to communicate.

We thank the committee for its time in considering our comment.

## DAYLIGHT SAVINGS TIME AND ENERGY

(By W. R. Harris\*)

I. ISSUES OF FEDERALISM UNDER THE UNIFORM TIME ACT<sup>1</sup>

My initial investigation addressed the question of state authority to promulgate year-round daylight savings time [hereafter DST] during an energy emergency, assuming a prior finding of net energy savings. Although there are currently bills before state legislatures in New York and Massachusetts,<sup>2</sup> it was my conclusion that under the 1972 amendments to the Uniform Time Act,<sup>3</sup> the states lacked authority to institute year-round DST, or authority to institute double daylight savings time [hereafter DDST] in summer. Neither the general emergency powers of one state governor, nor the special electric curtailment authority of another governor appeared to permit extended DST without new federal legislation.<sup>4</sup> Wintertime DST through administrative revision of time zone boundaries did not seem plausible.<sup>5</sup>

Extended DST would involve an hour's delay in sunrise throughout the nation. Despite the fact that the latest sunrises would occur in the northern tier of states, many of these state governments were actively considering the DST extension issue.<sup>6</sup> This development supported my reexamination of federal legislative alternatives, including: (Ia) permitting DST by state option in winter, as in summer; (Ib) effecting year-round DST nationwide; (IIa) permitting DDST by state option in summer; and (IIb) effecting year-round DDST in summer nationwide.

One conclusion which I drew from this legal review was that any estimates of DST and energy conservation should be structured so as to support a two-stage decision process: DST winter fuel savings as a percentage of winter fuel needs, and summer DDST fuel savings as a percentage of summer fuel needs. All prior estimates I had seen had *annualized* estimated fuel savings, making winter fuel savings appear twice as small and not providing estimates relevant to the actual legislative choices.

A second conclusion which I drew was that it would be helpful to have, by early 1974, estimates of approximate energy savings in DDST and estimates of the impact of DDST on complementary energy conservation measures. After reviewing tables of sunrises, sunsets, and civil twilight times, I concluded that it was unrealistic to consider DDST for the normal DST period (April 28, 1974–October 27, 1974) because of the inordinately late sunrises during September and October. Because summer sunrises are later in the southern latitudes than in the northern latitudes, the greatest inconvenience would fall on southern states, many with extensive agriculture. An alternative DDST period which captures most of the summer electrical peaks, which minimizes late sun-

\* Any views expressed in this paper are those of the author. They should not be interpreted as reflecting the views of The Rand Corporation or the official opinion or policy of any of its governmental or private research sponsors.

<sup>1</sup> P.L. 89-387, 90 Stat. 107, 15 U.S.C. §§261-267, as amended.

<sup>2</sup> H. 7708, which would re-establish DST in Massachusetts, passed the House of Representatives in that state in October 1973.

<sup>3</sup> P.L. 92-267, 86 Stat. 116, 15 U.S.C.A. §260a (1973 ed.), which states at §260a(b): "State laws superseded. It is hereby declared that it is the express intent of Congress by this section to supersede any and all laws of the States or political subdivisions thereof insofar as they may now or hereafter provide for advances in time or change-over dates different from those specified in this section." Even if the Congress did not intend to provide the states a unidirectional authority to forego summer DST while precluding winter DST, the 1972 amendments seem to effect that result under authority of Article I, §8, para. 5 of the U.S. Constitution to "fix the standards of weights and measures." See *Massachusetts State Grange v. Benton*, 10 F.2d 515, at 516 (1925), *affirmed*, 272 U.S. 525, 47 S. Ct. 189, 71 L. Ed. 87 (1926).

<sup>4</sup> During a hydroelectric shortage in 1947-1948 Governor Earl Warren exercised authority to continue DST in California between October 1948 and January 1949. An equivalent to the 1948 California statute under which Governor Warren acted would now be pre-empted by Title 15 U.S.C. §260a.

<sup>5</sup> Attorneys in the State of Washington briefly considered requesting the Department of Transportation to include Washington in the Mountain Standard Time Zone. A proposal to establish an Atlantic standard time zone which would include the New England states has been considered in Massachusetts. The DST issue is an agenda item for the November 14, 1973 meeting of the New England Conference of Governors. Department of Transportation administrative discretion is bound by the Congressional delegation of authority under the Uniform Time Act. Moreover, any Department of Transportation Allowance of a time zone change would be subject to the delays of the Administrative Procedure Act. See *Time Life Broadcast Co. v. Boyd*, 239 F. Supp. 219 (D.C. Ind. 1968).

<sup>6</sup> *Id.* Illinois, Maine, Massachusetts, New Hampshire, New York, Washington.

risers, and which ends before the start of the school year might run from the second Sunday in April to the Sunday before the first Monday in September, in 1974 running from April 14 to September 2nd. Because legislative consideration of DDST was not imminent and could reasonably be deferred until early 1974, I concentrated upon possible effects of continuing DST from the last Sunday in October through the last Sunday in April.

## II. PRELIMINARY ESTIMATES OF ENERGY CONSERVATION IN DST EXTENSION

(Last Sunday in October to last Sunday in April)

I have neither collected data which would support statistical validation nor have I attempted significance tests respecting collected data. Accordingly, I shall summarize my informal review of the following energy sectors:

- (A) Electrical Sector
- (B) Commercial Space Heating and Cooling
- (C) Industrial Space Heating and Cooling
- (D) Residential Space Heating and Cooling
- (E) Motor Gasoline Consumption
- (F) Effects of Year-Round DST on Other Energy Conservation Measures

### (A) Electrical Sector

I identified only two published statistical evaluations of DST and national electric production,<sup>7 8</sup> both of which were, unfortunately, studies of *wartime* in World War II, a period preceding most of the electric heating, cooling, and appliance utilization of recent years.

Both the Bary study<sup>7</sup> and the AEIC Report<sup>8</sup> concentrate upon electrical production (or "consumption," or "load" or "energy") savings. I found no comprehensive study of nationwide electric utility fuel savings, the major component of which may result from increased generating efficiencies during electric peak reductions. The World War II studies remain of interest in part because evening wintertime peaks still occur, much of the time, between sunset and "civil twilight."<sup>9</sup> Bary compared electric consumption trends in 1939-1941 with those after February 9, 1942, the beginning of year-round DST (wartime); he estimated an annual electric energy savings of  $1572 \times 10^6$  or about 0.97% of electric production. Had some cities not already applied DST in summer, Bary predicted a theoretical year-round savings of about 1.11%. Bary did not estimate a separate energy savings rate for the October-to-April period.

The AEIC study<sup>8</sup> was in general agreement with the Bary estimates. The AEIC study included estimates of peakload reductions for large utility systems: an average of morning and evening changes in peaks showed a reduction of 4.00% for December 1942 (average of evening peak reductions and morning peak increases); for February 1943 there was an 11.1% reduction in evening peaks, 2.8% increase in morning peaks. These estimates show the possible significance of reductions in peakload; it is impossible, however, to translate them into fuel savings applicable to the present situation.

The only identified electric utility fuel savings from World War II is that of the Georgia Power Company, which attributed to "wartime" a fuel savings of some 2%.<sup>10</sup>

During the 1947-1948 hydroelectric shortage in California, the California Public Utilities Commission estimated that DST would save about 136,000,000 Kwh or about 1% of electric energy. Evening peak reductions were estimated at 5% in February, and 7.7% in December 1948.<sup>11 12</sup> Since there was a water, not a fuel shortage, there was no study of potential utility fuel savings.

<sup>7</sup> C. Bary, *Effects of War Time on Class I Utility Systems in the United States* (Washington, D.C.: War Production Board, February 1943).

<sup>8</sup> Association of Edison Illuminating Companies, *Report of the Subcommittee on the Effects of War Time Dimouts, Blackouts, and Government Conservation Programs Association Minutes, 1946-1947*, pp. 677-691.

<sup>9</sup> At civil twilight the sun is below the horizon and  $96^\circ$  from its zenith. "The degree of illumination at . . . civil twilight (in good conditions and in the absence of other illumination) is such that the brightest stars are visible and the horizon is clearly defined." U.S. Naval Observatory, *Nautical Almanac for the Year 1974* (1972), p. 258.

<sup>10</sup> *New York Times*, February 23, 1945, p. 13; March 4, 1945, p. 8; August 25, 1945, p. 24.

<sup>11</sup> O'Brien, *Report on a Power Survey of the State of California*, California Public Utilities Commission Special Study 696 (1949).

<sup>12</sup> Stuart Ross, Paper, University of California, Berkeley, forthcoming, 1973.

During a coal shortage in October 1970, the Federal Power Commission instituted a survey of projected electric utility fuel savings in year-round DST. Nine regional electric reliability councils polled the electric utilities, but in view of the DST transition deadline most utilities estimated reductions in electric consumption rather than utility fuel savings which would have taken into account the relative efficiencies of peak generation equipment. The Federal Power Commission summary noted that "no significant reductions in fuel requirements would be expected to result from an extension of daylight time." This conclusion was derived from utility estimates of fuel savings varying from 0% to 2%.

One rough measure of daylight effects on electric consumption involves comparison of the decrease in electric "loads" between the first week of DST and the last week of standard time [ST], or the increase between the last week of DST and the first week of ST.<sup>10</sup> Although the average change in U.S. electric production in the first (or last) week of DST as a percentage of the electric production level in the adjoining last (or first) week of ST was 1.10% for the 15 transitions of Spring 1966–Spring 1973,<sup>11</sup> the average change for the three transitions preceding October 1970 was only 0.84%. For many utilities any recent DST transition savings would have been especially hard to identify, amidst seasonal and weather variations, particularly at the time of the 1970 FPC survey. My inquiries to various electric utilities have yielded only one electric utility estimate of DST energy savings in conjunction with an estimate of peak reduction generating efficiencies. Southern California Edison Company has estimated that extension of DST year-round would save about 0.60% of October to April electric production, but fully 1.44% of utility fuel requirements in this same period. Thus, the percentage fuel savings were 2.4 times the percentage energy savings. The author of the SCE estimate has asserted, upon inquiry, that he assumed an electric peak reduction of 200 megawatts, or only 2.5% of system peaks in arriving at the above fuel savings estimate.<sup>12</sup> Both estimated electric energy savings and peak reduction savings are substantially below those reported in prior literature for other utilities. If the Southern California Edison proportion of fuel savings to electric energy savings is at all representative (which it may not be), electric utility fuel savings could be far more significant than has generally been recognized. Individual judgment in these matters is a poor substitute for a utility-by-utility survey, when fuel savings may vary widely from one utility to another.

In my own preliminary calculations, I compared nationwide electric production figures for the week before and after transition to or from daylight savings time. These figures are not adjusted for weather or seasonal variations. Even if relevant temperature data had been available, it could not at the outset tell me whether air conditioning demand exceeded electric heating losses, or vice versa. The average change in electrical production was 1.10% for 15 transitions (1966–1973). This involved an average spring transition change of 0.51%, and an average change in the fall of 1.78%. As a perfunctory check of seasonal trends, the two week electric production figures before and after DST transitions were compared. The fall transition involved an average change in the two week DST period of 1.74%, close to the one week change of 1.78%, the spring transition average change in the two week period was only 0.19%. It is possible that spring air conditioning associated with temperature rises in May unduly depresses the visible drop in electrical production in the first weeks of spring DST.<sup>13</sup> Any number of other variables could account for this discrepancy, however. It should be recalled that no analysis of statistical significance has been carried out. Moreover, even if the transition percentages are valid for those particular weeks, they would not establish the level of cumulative savings for the entire October to April period.

<sup>10</sup> Estimates of percentage changes between adjacent weeks of transition between DST and ST or vice versa in the discussion below assume that the ST estimate is the denominator, and only the absolute value of the change is shown, ignoring sign.

<sup>11</sup> See the attached graph, "Percent Change Electric Production (MkWh) in DST Crossover Period as Percent of ST Crossover Period Base, 1966–1973."

<sup>12</sup> The published SCE estimate is contained in a contingency plan which favors retention of DST and which estimates a fuel savings of 550,000 barrels of oil. See: Southern California Edison, *Contingency Plan for Fuel Shortage and Electric Energy Crisis*, Case No. 9581, California Public Utilities Commission (Rosemead, California: SCE, October 1973).

<sup>13</sup> A heat wave in early May 1973 could, for example, explain a rise in electrical production in that period, compared to production levels in late April 1973.

Would any savings in November, December, or January exceed the savings in late October DST? Although a systems analyst at Southern California Edison thinks the December savings could be greater, I am inclined to think not.<sup>16</sup>

My preliminary conclusion is that, without further study, no single number for electric energy savings or electric utility fuel savings should be given much credence. As a test of the possible magnitude of electric utility fuel savings, I assumed high and low values of electric production savings with October-April DST: 0.9% or 1.5% of electric production in October-April. I would assert of this range only that it brackets the national estimates that I have so far encountered. National fuel savings from these load reductions (as a percentage of national fuel requirements in this October-April period) would then range from 0.2 to 0.4 since electric utilities account for about 25% of national fuel requirements.

Assuming that electric peakload reductions permit a shift of 2% to 6% of area loads from 0.20 to 0.25 generating efficiency, and 0% to 4% of area loads from 0.22 to 0.33 efficiency, peak reduction fuel efficiencies could save an additional 0.1% to 0.6% of October-April national fuel requirements. Combining all the low estimates and all the high estimates yields a range of electrical sector fuel savings from .3% to 1.0% of October-April fuel.

#### *(B) Commercial Space Heating and Cooling*

Richard G. Salter included in a computer simulation model of large, high-rise, commercial buildings, situated in Albuquerque, Los Angeles, Miami, Minneapolis, and New York City, the variable of year-round daylight savings time.<sup>17</sup> Despite expectations of increased commercial heating fuel needs in wintertime DST, the preliminary results suggest a possible savings of 3.9% of commercial heating requirements in the October-April period. So as to estimate the impact of these posited fuel savings on national fuel requirements, Salter estimated that October-April heating constitutes roughly 45% of commercial energy demand. Assuming that the commercial sector utilizes about 16% of national fuel demand, a 3.9% reduction in commercial heating would save about 0.3% of October-April national fuel requirements. The electric portion of the commercial heating load, and the commercial air conditioning load (almost entirely electric), are both included in the electric savings estimated previously. Correcting the savings in commercial heating energy for this yields savings of 0.25% of October-April national fuel requirements.

However, the effects of wintertime DST in small commercial buildings, or in those which do not yet set back thermostats after working hours ("set back" being assumed in the computer simulation) are not known. National fuel savings could be lower than suggested above. On the other hand, if heating in the commercial sector accounts for more than 45% of commercial fuel requirements,<sup>18</sup> the percentage of national fuel savings could exceed the levels in Salter's preliminary calculations. Precise forecasting would require attention to alternative assumptions, such as the effects of DST on heating requirements in commercial buildings without thermostat set back procedures.

#### *(C) Industrial Space Heating and Cooling*

Industrial space heating and cooling has not been examined. Mr. Salter considers it possible that small space heating savings might be derived from the industrial sector in year-round DST. No figures are available.

#### *(D) Residential Space Heating and Cooling*

Effects of daylight savings time on residential space heating and cooling appear to be so slight that precise forecasts, if at all possible, would involve considerable effort. Residences in which thermostats are already set to lower night temperatures might use additional fuel when thermostats are raised at

<sup>16</sup> December peak reductions in World War II but not in California in 1948 were apparently less than peak reductions in February. However, a given magnitude of peak savings may be more valuable in December and January when winter peaks occur, and less efficient generators are on line.

<sup>17</sup> The computer program, E-CUBE, was developed by the American Gas Association and is briefly discussed in Richard G. Salter and Deane N. Morris, "Energy Conservation in Public and Commercial Buildings," P-5093, The Rand Corporation, Santa Monica, California, October 1973.

<sup>18</sup> Stanford Research Institute estimated commercial heating at 54 percent of commercial energy demand in the year 1968. The share of heating in October-April could be substantially higher.

colder morning temperatures. A preliminary estimate from the Council on Environmental Quality assumed that 10% of residences involved evening thermostat set backs, and estimated a loss of 400,000 barrels of oil per annum, which, rounded to the nearest hundredth of a percent, had a 0.00% effect on national fuel requirements. Another insubstantial DST effect involves residential heating requirements associated with the loss of waste heat in reduced home illumination requirements.

#### (E) Motor Gasoline Consumption

Concern has been expressed that an extra hour of evening daylight would facilitate discretionary automobile driving, and consequently a loss of motor gasoline fuel. Before any data on DST and motor gasoline sales had been consulted, a sensitivity test elaborated in another agency assessed the consequences of every American family taking one extra 30 mile automobile trip per month. Under those assumptions, about five million gallons of motor gasoline would be wasted each day. This would involve increased motor gasoline demand of about 1.8%, or a passenger mile increase of more than 2.5% per day.<sup>19</sup>

This set of assumptions notwithstanding, there is presently no known statistically significant relationship between the institution of daylight savings time and increased motor gasoline sales.<sup>20</sup> Even if an hour of additional evening light encouraged discretionary driving, it should be noted that the extra hour of light in extended DST catches many cars and drivers at work or in commuter streams. The problem of discretionary automobile use, if it is a problem, is primarily one to be considered in the context of double daylight savings time in summer.<sup>21</sup>

#### (F) Effects of Year-Round DST on Other Energy Conservation Measures

Public enthusiasm for extended daylight savings time<sup>22</sup> may, indirectly, facilitate public acceptance of other energy conservation measures. In World Wars I and II daylight savings and energy conservation were symbols of national purposefulness. However little understood, the psychological acceptance of DST may herald public acceptance of other energy conservation measures, many with greater conservation potential. For example, frivolous evening driving might become less, not more of a problem, if extended DST were adopted and that problem given special attention. A campaign to encourage public utilization of mass transit could be assisted both by an extra hour of evening light and reduced fear of daylight crime.

Extended DST would not only influence the likelihood of public acceptance, but also the energy consequences of other conservation measures. The major effects of such measures as thermostat set backs in commercial buildings deserve careful evaluation.

Even if DST is a modestly valuable energy conservation measure, it should not be permitted to sidetrack attention from more significant conservation programs. If DST is considered as just a small part of a broad energy conservation strategy, then it can contribute to other essential program elements.

One relationship of DST to other energy conservation programs is obvious, but worth noting. That is the relationship between wintertime daylight savings

<sup>19</sup> The conversion from 1.8% of motor gasoline to 2.5% of passenger miles is derived from the Department of Transportation's *Highway Statistics*, 1971 (1972 ed.) estimate that 69,514,000,000 of 97,547,000,000 motor gasoline gallons, or 71%, are consumed by passenger cars and motorcycles.

<sup>20</sup> See the attached graph, "Motor Gasoline Sales, Daylight Savings Time Months (May-October) as Percent of Annual Sales, 1964-1972."

<sup>21</sup> When the United Kingdom established year-round DST, there was greater concern about extra driving than was actually observed. Seven percent of respondents to a survey stated that as a consequence of later morning darkness in winter they began driving children to school. New discretionary auto trips were mainly on weekends. If darkness encouraged morning driving, delay in darkness may have reduced evening chauffeuring of children. Available statistics on the British experience are inconclusive. In the United States later darkness may curtail a portion of teenage driving associated with evening outings, drive-in movies, etc. In any case, there are factors operating or policies that could be implemented during fuel scarcities that would tend to reduce the amount of extradiscretionary driving to be expected.

<sup>22</sup> Especially in urban areas, extended DST is popular. *Chicago Today* received over 5,000 responses to a question on year-round DST in October 1973; over 97% were favorable. The *St. Louis Post-Dispatch* in October 1973 received responses favoring DST by 15 to 1. A national poll prepared for the Department of Transportation in October 1973 indicated that 52% supported continued DST, while another 26% had no objection to it.

time and double daylight savings time in summer. Without DST in winter or an early start of DST in the spring, the transition to double daylight savings time in summer is perhaps unpalatable.

### III. NON-ENERGY EFFECTS OF YEAR-ROUND DST

The most direct effect of year-round DST on society is the delay of morning sunrise by one hour. Winter sunrises are latest in northern latitudes, and in the western sectors of time zones. At 490° N. latitude, the northern rim of the western states, on December 21-23, 1973, the central section of each DST time zone would be affected by sunlight approximately as follows: <sup>23</sup> Civil twilight, 8:15 a.m. (DST); Sunrise, 8:51 a.m. (DST); Sunset, 5:05 p.m. (DST); Civil twilight, 5:42 p.m. (DST).

Especially in northern parts of the country, where winter sunrises may be late and roads icy, it may be worth considering later school starts, if DST is extended year-round. <sup>24</sup>

The effect of year-round DST on highway accidents is not the subject of thorough investigation. The British experience with DST in 1968-1970 did not result in any noticeable increase in highway injuries to school children. Serious highway accidents and fatalities dropped about 8.8%. Because most highway accident risks occur late in the day or in the evening, it is widely believed but not proven that DST would increase highway safety. <sup>25</sup>

Similarly, it is widely posited but not proven that DST would reduce crime by postponing crimes until hours when fewer likely crime victims are vulnerable. <sup>26</sup>

### IV. SUMMARY

My analysis of daylight savings time as an energy conservation measure began with a review of the controlling federal legislation, the Uniform Time Act of 1966 as amended in 1972. That legislation apparently precludes states or regions from adopting year-round daylight savings time, even as an emergency energy conservation measure. If the Congress either permits or requires extended daylight savings time in the winter months, I anticipate that the question of permitting or requiring double daylight savings time in summer will come under review in early 1974. A research effort which reduced uncertainty as to the effects of daylight savings time, or double daylight savings time, and which explored any relationships between public acceptance of daylight savings time and other energy conservation measures could be of value to both the executive and legislative branches.

The net energy savings associated with a switch from standard time in winter and daylight savings time in summer to year-round daylight savings time are or undetermined magnitude. But unless motor gasoline sales increased by more than 3%, I would anticipate at least some net energy savings if electric consumption is reduced only 0.9% and if only 2% of electric production can be switched from generating efficiencies of 0.20 to generating efficiencies of 0.25. Moreover, preliminary data on motor gasoline sales in states which have adopted or abandoned daylight savings do not suggest percentage changes in motor gasoline sales of nearly 3%, even if all of the variance were ascribed to daylight savings time and none to weather variations. Net national fuel savings associated with daylight savings time in October to April might be as high as one to one and one-half percent, and might be as low as a modest fraction of one percent. Too much remains unknown to rely on any one number. But in a year of fuel shortages, even a fractional percentage savings could be of significance. Energy savings must be evalu-

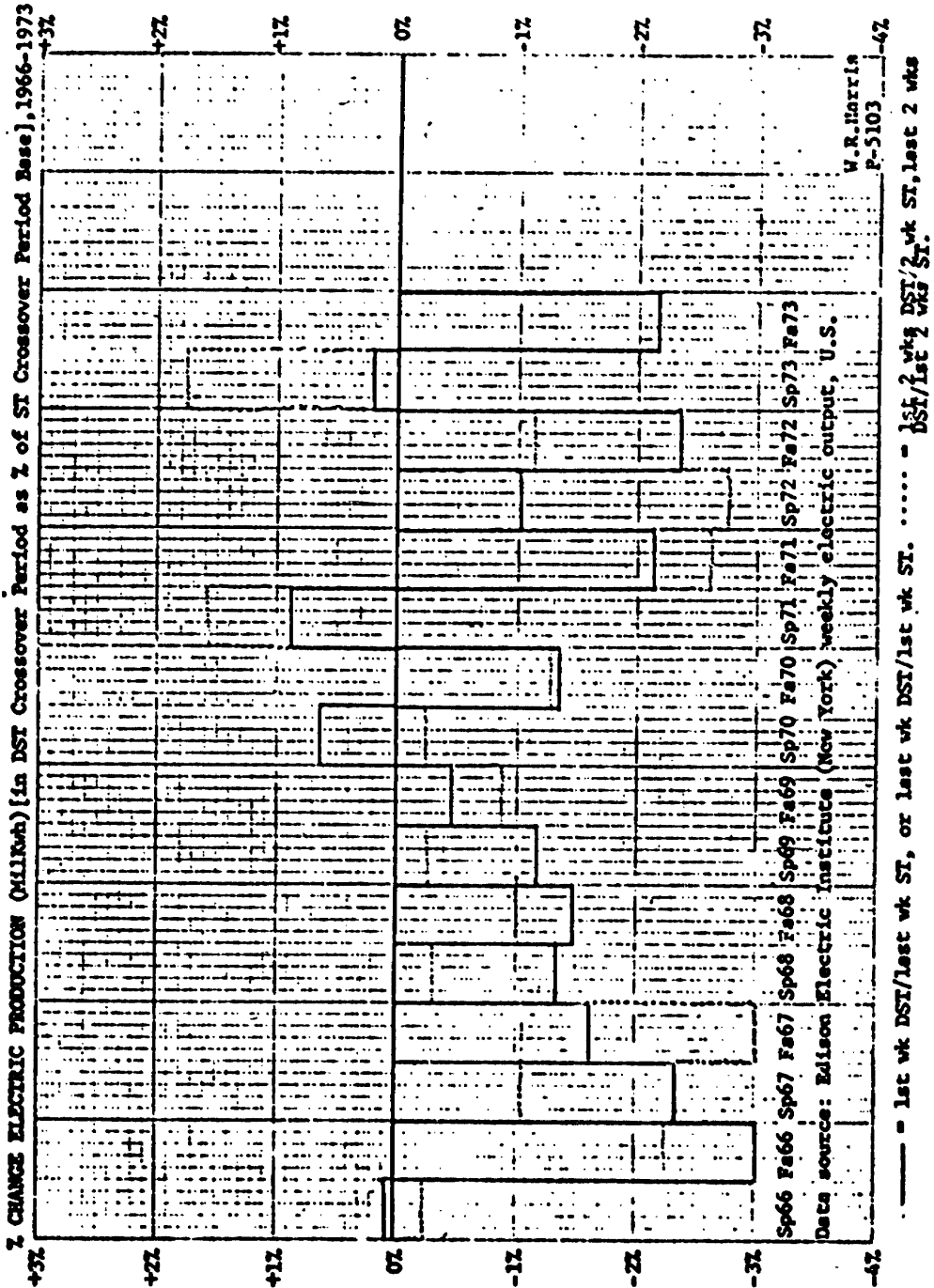
<sup>23</sup> U.S. Naval Observatory, *The Nautical Almanac for the Year 1973* (1971), p. 247; 1974 (1972), p. 247.

<sup>24</sup> "After all, there is nothing sacred about school beginning at 8 a.m. and ending at 3 p.m. In fact, the traditional 3 p.m. closing time came into effect so the little tots could go home while it was still bright and sunny, and have a few hours left for outdoor play." Robert Myers, *PSA Magazine* (October 1973), p. 44.

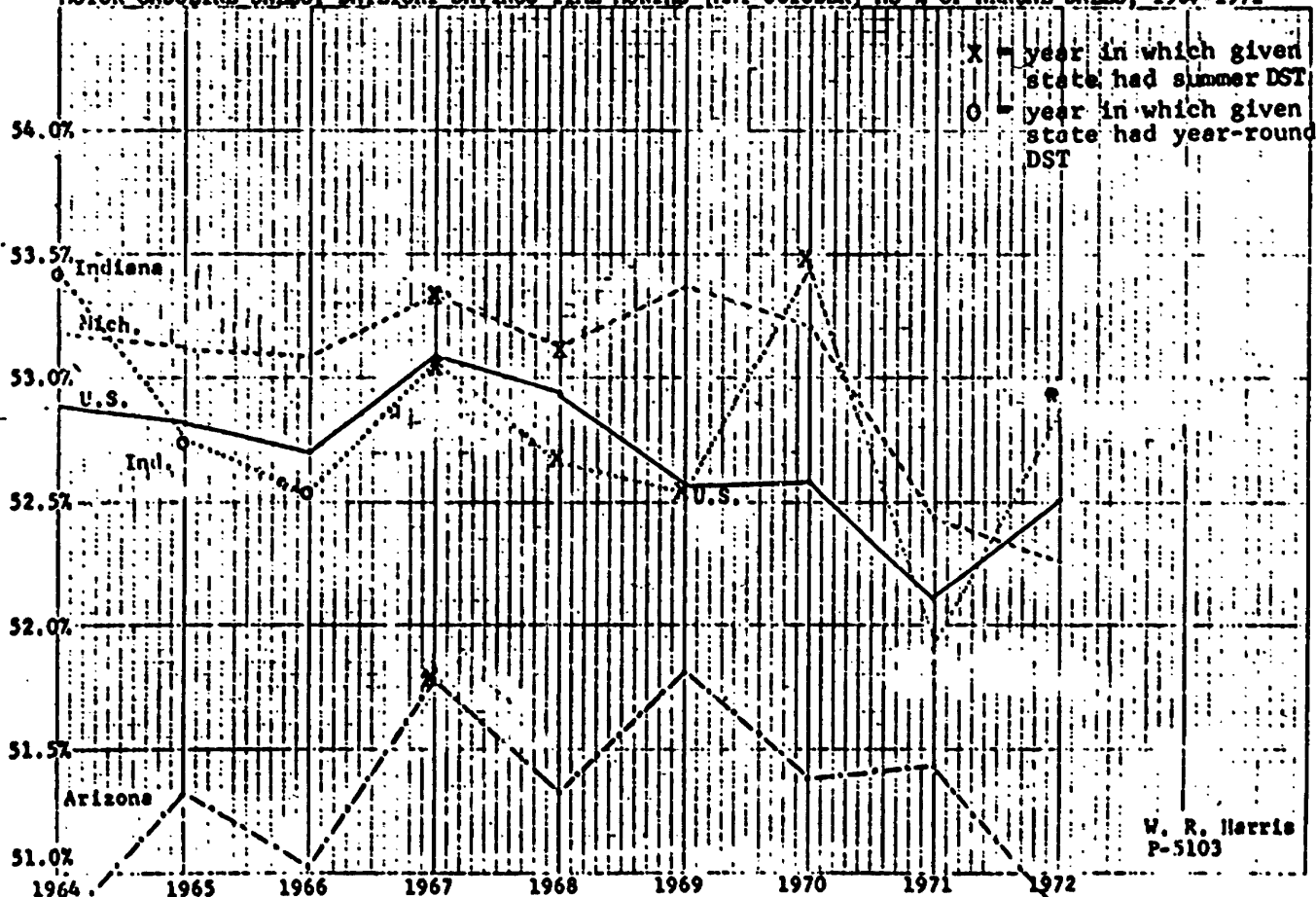
<sup>25</sup> Fatigue and traffic density are reportedly greater in late afternoon than in early morning. Of non-alcohol related crashes, 25% occur between 6 p.m. and 9 p.m., and 15% between 3 p.m. and 6 p.m., but only 11% occur between 6 a.m. and 9 a.m. See: Secretary of Transportation, *1968 Alcohol and Highway Safety Report*. However, the death rate per 100 million vehicle miles was, in both 1971 and 1972, greater in October than November and greater in May than in April. The 1971 rates were: April (4.7); May (5.1); October (5.5); November (5.0). The 1972 rates were: April (4.5); May (4.8); October (5.3); November (4.6). National Safety Council, *Accident Facts, 1971 and Accident Facts, 1972*.

<sup>26</sup> See: Federal Bureau of Investigation, *Crimes in the United States, 1972*, Chart 14, "Crimes by Month," pp. 26-27.

ated in the context of non-energy effects of daylight savings time. The one well established non-energy effect is the rising of the sun one hour later, at inconvenience to many people. Possible crime reductions or highway safety benefits are as yet uncertain and unproven. And finally, the psychological impact of winter daylight savings time may be of greater significance than any direct fuel savings in a period of perceived energy shortages. What remains is a legislative judgment which must include consideration of the psychological intangibles.



MOTOR GASOLINE SALES, DAYLIGHT SAVINGS TIME MONTHS (MAY-OCTOBER) AS % OF ANNUAL SALES, 1964-1972



\* = Indiana on DST in eastern counties, 1972 (ca. 80% ST).

W. R. Harris  
P-5103

[Telegrams]

NOVEMBER 13, 1972.

Senator WARREN MAGNUSON,  
*Chairman, Commerce Committee,*  
*Senate Office Building,*  
*Washington, D.C.*

The following statement is submitted for the record of the Senate Commerce Committee hearing on daylight savings time; electric utilities in the United States portion of the northwest power pool are of the opinion that electric energy savings would be minimal if this area remained on daylight savings time on a year-round basis. There may be some reduction in electric peak load of the pool at certain times during the winter season. The main advantage would be the psychological effect on the public in helping to remind them of the energy crisis.

HONOLULU, November 13, 1973.

Hon. WARREN G. MAGNUSON,  
*Chairman, Senate Commerce Committee*  
*U.S. Senate,*  
*Washington, D.C.*

The State of Hawaii requests exemption from any congressional action, specifically S 2602, which would mandate daylight saving time for the nation.

Our request is based upon our historical experience with World War II "war time."

On our geographical location, on our past appraisals of power and energy savings related to daylight saving time and on Hawaii's unique cultural patterns of early rising. Before World War II, Hawaii was two and one-half hours behind Pacific standard time. Under martial law, Hawaii had four years of daylight saving time by order of the military governor, from February 1942 to September 1945.

Subsequently, Hawaiian standard time remained in force until May 1947, when Hawaii modified its standard time, accepting a permanent half hour of "daylight saving time."

This placed Hawaiian clocks permanently thirty minutes ahead of the sub and permanently established a two-hour differential between Hawaiian standard time and Pacific standard time.

This ideal time has been in effect ever since. It was the decision of the people of Hawaii, after exhaustive legislative hearings and public discussion, that this time was ideal for purposes of making maximum use of daylight hours, for maximum energy conservation, for public safety and for mainland-Hawaii time-zone convenience. Hawaii's cultural patterns have included early rising for nearly all segments of island society.

Our agricultural workers are up before dawn. Most state government offices begin work at 7:45 a.m. Pearl Harbor daytime shifts begin at 6:30 and for most shipyard workers at 7 a.m. By and large, Hawaii's people are early to bed and early to rise citizens, and we are already on thirty minutes of de facto daylight saving time.

To impose an additional hour on this ideal time would not conserve energy resources in Hawai but merely transfer energy use from night to morning hours. We will be grateful if Hawaii can be exempted from mandatory daylight saving time. We have pledged our full cooperation in the national energy crisis, and we believe our present Hawaiian time will provide optimum energy savings in our islands.

Aloha

GEORGE R. ABIYOSHI,  
*Acting Governor of Hawaii.*