

Committee Report

REGULAR CALENDAR

February 22, 2021

HOUSE OF REPRESENTATIVES

REPORT OF COMMITTEE

**The Majority of the Committee on Executive
Departments and Administration to which was referred
HB 85,**

**AN ACT relative to using Atlantic Standard Time in
New Hampshire. Having considered the same, report
the same with the recommendation that the bill OUGHT
TO PASS.**

Rep. Kristina Schultz

FOR THE MAJORITY OF THE COMMITTEE

MAJORITY COMMITTEE REPORT

Committee:	Executive Departments and Administration
Bill Number:	HB 85
Title:	relative to using Atlantic Standard Time in New Hampshire.
Date:	February 22, 2021
Consent Calendar:	REGULAR
Recommendation:	OUGHT TO PASS

STATEMENT OF INTENT

This bill would switch New Hampshire to the Atlantic Time Zone, or you could consider it “daylight saving all year.” This change eliminates the inconvenient and dangerous clock changes in spring and fall, which have been shown to cause auto and work accidents, heart attacks, strokes and many other problems because of sleep disturbance. Yes, it will be darker on winter mornings, but afternoons will be lighter; winter days just aren’t long enough here to have sunlight all the time we’re out and about. Under the bill, this change would be triggered when Maine and Massachusetts also agree to make a permanent switch to Atlantic Standard Time, so that we would remain on the same time as our neighboring states. Massachusetts is the major actor in New England, with over 100,000 New Hampshire people commuting there every day. Passing this bill may encourage Massachusetts to adopt this change, to our benefit as well as theirs.

Vote 14-5.

Rep. Kristina Schultz
FOR THE MAJORITY

Original: House Clerk
Cc: Committee Bill File

REGULAR CALENDAR

Executive Departments and Administration

HB 85, relative to using Atlantic Standard Time in New Hampshire. **MAJORITY: OUGHT TO PASS. MINORITY: INEXPEDIENT TO LEGISLATE.**

Rep. Kristina Schultz for the **Majority** of Executive Departments and Administration. This bill would switch New Hampshire to the Atlantic Time Zone, or you could consider it “daylight saving all year.” This change eliminates the inconvenient and dangerous clock changes in spring and fall, which have been shown to cause auto and work accidents, heart attacks, strokes and many other problems because of sleep disturbance. Yes, it will be darker on winter mornings, but afternoons will be lighter; winter days just aren’t long enough here to have sunlight all the time we’re out and about. Under the bill, this change would be triggered when Maine and Massachusetts also agree to make a permanent switch to Atlantic Standard Time, so that we would remain on the same time as our neighboring states. Massachusetts is the major actor in New England, with over 100,000 New Hampshire people commuting there every day. Passing this bill may encourage Massachusetts to adopt this change, to our benefit as well as theirs. **Vote 14-5.**

Original: House Clerk
Cc: Committee Bill File

REGULAR CALENDAR

February 22, 2021

HOUSE OF REPRESENTATIVES

REPORT OF COMMITTEE

**The Minority of the Committee on Executive
Departments and Administration to which was referred
HB 85,**

**AN ACT relative to using Atlantic Standard Time in
New Hampshire. Having considered the same, and
being unable to agree with the Majority, report with the
following resolution: RESOLVED, that it is
INEXPEDIENT TO LEGISLATE.**

Rep. Sallie Fellows

FOR THE MINORITY OF THE COMMITTEE

MINORITY COMMITTEE REPORT

Committee:	Executive Departments and Administration
Bill Number:	HB 85
Title:	relative to using Atlantic Standard Time in New Hampshire.
Date:	February 22, 2021
Consent Calendar:	REGULAR
Recommendation:	INEXPEDIENT TO LEGISLATE

STATEMENT OF INTENT

The greatest concern of the minority of the committee is public safety. Switching to the Atlantic time zone means the sun would rise one hour later in the winter. In December and January this would be between 8:00 and 8:15 a.m.. Children would be waiting for the school bus in the dark of night. After a snow storm, darkness would make a treacherous morning commute more dangerous. Radio and TV broadcasters oppose this bill because prime time shows would run from 9 p.m. to midnight, Sunday night football would end after midnight, and they would lose revenue. The minority doesn't accept claims that eliminating Daylight Saving Time has health benefits. Your risk of a heart attack is increased by high blood pressure, high cholesterol, and diabetes, not loss of one hour of sleep once a year.

Rep. Sallie Fellows
FOR THE MINORITY

Original: House Clerk
Cc: Committee Bill File

REGULAR CALENDAR

Executive Departments and Administration

HB 85, relative to using Atlantic Standard Time in New Hampshire. **INEXPEDIENT TO LEGISLATE.**

Rep. Sallie Fellows for the **Minority** of Executive Departments and Administration. The greatest concern of the minority of the committee is public safety. Switching to the Atlantic time zone means the sun would rise one hour later in the winter. In December and January this would be between 8:00 and 8:15 a.m.. Children would be waiting for the school bus in the dark of night. After a snow storm, darkness would make a treacherous morning commute more dangerous. Radio and TV broadcasters oppose this bill because prime time shows would run from 9 p.m. to midnight, Sunday night football would end after midnight, and they would lose revenue. The minority doesn't accept claims that eliminating Daylight Saving Time has health benefits. Your risk of a heart attack is increased by high blood pressure, high cholesterol, and diabetes, not loss of one hour of sleep once a year.

Original: House Clerk
Cc: Committee Bill File

Archived: Tuesday, April 20, 2021 9:30:56 AM
From: [Miriam Simmons](#)
Sent: Tuesday, April 20, 2021 8:58:09 AM
To: [Miriam Simmons](#)
Subject: HB 85 CR -Rep Schultz
Response requested: No
Importance: Normal

From: Carol McGuire <mcguire4house@gmail.com>
Sent: Tuesday, March 2, 2021 10:24 AM
To: Miriam Simmons <miriam.simmons@leg.state.nh.us>; Pam Smarling <Pam.Smarling@leg.state.nh.us>
Subject: Fwd: Outstanding Committee Reports

Good to go

----- Forwarded message -----

From: **Kris Schultz** <kris.schultz@leg.state.nh.us>
Date: Tue, Mar 2, 2021 at 9:46 AM
Subject: Re: Outstanding Committee Reports
To: Miriam Simmons <miriam.simmons@leg.state.nh.us>
CC: Steve Pearson <Steve.Pearson@leg.state.nh.us>, Carol McGuire <McGuire4House@gmail.com>

Hello! Totally forgot I even made a motion on anything. Here is a draft Committee Report Blurb for HB85, which uses Carol's from 2019 & inserted a few points I've been using, and excluded Vermont. The guy who argued against the bill bc of VT isn't in the legislature but :

This bill would switch New Hampshire to the Atlantic Time Zone, or you could consider it "daylight saving all year." This change eliminates the inconvenient and dangerous clock changes in spring and fall, which have been shown to cause auto & work accidents, heart attacks, strokes and many other problems because of sleep disturbance. Yes, it will be darker on winter mornings, but afternoons will be lighter; winter days just aren't long enough here to have sunlight all the time we're out and about. Under the bill, this change would be triggered when Maine and Massachusetts also agree to change their time, so that we would remain on the same time as our neighboring states. Massachusetts is the major actor in New England, with over 100,000 New Hampshire people commuting there every day. Passing this bill may encourage Massachusetts to adopt this change, to our benefit as well as theirs.

Voting Sheets

HOUSE COMMITTEE ON EXECUTIVE DEPARTMENTS AND ADMINISTRATION

EXECUTIVE SESSION on HB 85

BILL TITLE: relative to using Atlantic Standard Time in New Hampshire.

DATE: February 22, 2021

LOB ROOM: Remote / Hybrid

MOTIONS: **OUGHT TO PASS**

Moved by Rep. Schultz

Seconded by Rep. Roy

Vote: 14-5

CONSENT CALENDAR: NO

Statement of Intent: Refer to Committee Report

Respectfully submitted,

Rep John Sytek, Clerk

HOUSE COMMITTEE ON EXECUTIVE DEPARTMENTS & ADMINISTRATION

EXECUTIVE SESSION on Bill # HB 85

BILL TITLE: RELATIVE TO USING ATLANTIC STANDARD TIME IN NH

DATE: 2-22-21

LOB ROOM: 306-308

MOTION: (Please check one box)

☒ OTP ☐ ITL ☐ Retain (1st year) ☐ Adoption of
Amendment # _____
☐ Interim Study (2nd year) (if offered)

Moved by Rep. SCHULTZ Seconded by Rep. Roy Vote: 14-5

MOTION: (Please check one box)

☐ OTP ☐ OTP/A ☐ ITL ☐ Retain (1st year) ☐ Adoption of
Amendment # _____
☐ Interim Study (2nd year) (if offered)

Moved by Rep. _____ Seconded by Rep. _____ Vote: _____

MOTION: (Please check one box)

☐ OTP ☐ OTP/A ☐ ITL ☐ Retain (1st year) ☐ Adoption of
Amendment # _____
☐ Interim Study (2nd year) (if offered)

Moved by Rep. _____ Seconded by Rep. _____ Vote: _____

MOTION: (Please check one box)

☐ OTP ☐ OTP/A ☐ ITL ☐ Retain (1st year) ☐ Adoption of
Amendment # _____
☐ Interim Study (2nd year) (if offered)

Moved by Rep. _____ Seconded by Rep. _____ Vote: _____

CONSENT CALENDAR: _____ YES ☒ NO

Minority Report? _____ Yes _____ No If yes, author, Rep: _____ Motion _____

Respectfully submitted: _____

Rep. John Sytek, Clerk



1/22/2021 9:57:48 AM
Roll Call Committee Registers
Report

2021 SESSION

Executive Departments and Administration

Bill #: HB 85 Motion: OTP AM #: _____ Exec Session Date: 2-22-21

<u>Members</u>	<u>YEAS</u>	<u>Nays</u>	<u>NV</u>
McGuire, Carol M. Chairman	X		
Roy, Terry Vice Chairman	X		
Sytek, John Clerk	X		
Pearson, Stephen C.	X		
Yakubovich, Michael	X		
Lekas, Tony	X		
Alliegro, Mark C.	X		
Bailey, Glenn	X		
Lanzara, Tom E.	X		
Santonastaso, Matthew	X		
Goley, Jeffrey P.		X	
Schuett, Dianne E.		X	
Jeudy, Jean L.		X	
Schmidt, Peter B.	X		
Schultz, Kristina M.	X		
Fellows, Sallie D.		X	
Fontneau, Timothy J.	X		
Grote, Jaci L.		X	
O'Brien, Michael B.	X		
TOTAL VOTE:			

14-5

Hearing Minutes

HOUSE COMMITTEE ON EXECUTIVE DEPARTMENTS AND ADMINISTRATION

PUBLIC HEARING ON HB 85

BILL TITLE: relative to using Atlantic Standard Time in New Hampshire.

DATE: **March 11th** (opened at 10:00/and recessed at 10:45 to 10 AM, Feb. 18 so as not to interfere with Governor's budget address)

and on **DATE:** **March 18th** (opened at 10 A.M. and closed at 11:05 a.m.)

LOB ROOM: LOB Hybrid

ALL MEMBERS PRESENT ON BOTH PUBLIC HEARING DATES

Committee Members: Reps. McGuire, Roy, Sytek, S. Pearson, Yakubovich, T. Lekas, Alliegro, Bailey, Lanzara, Santonastaso, Goley, Schuett, Jeudy, P. Schmidt, Schultz, Fellows, Fontneau, Grote and O'Brien

Bill Sponsors:

Rep. Yokela
Rep. Schultz

Rep. Yakubovich
Rep. Hill

Rep. A. Lekas

TESTIMONY

* Use asterisk if written testimony and/or amendments are submitted.

MARCH 11th, 2021

1. Rep. Yokela introduced the bill and spoke in favor.

Rep Yokela said it was the same as had been filed two years ago. He said that the Eastern Time Zone was very wide, that California and Florida were considering going to daylight saving time year-round which would require an act of Congress. He said that this bill would not. He said that this switch would have our time different only 4 months of the year; we would be at the same time when other states went to daylight saving time. He cited economic advantages and safety considerations and acknowledged resistance from the broadcast industry. For this reason, he said that we would go as a block with Massachusetts and Maine.

Questions - There were questions as to what other states are considering this change and the relationship of the contingencies. Would there be consequences with electronic devices purchased in this changed time zone? Doesn't the US Secretary of Dept. of Transportation have to give permission?

2. Rep. Horrigan said that he introduced a related bill in 2011, opposed.

Rep. Horrigan spoke in opposition saying it was simplest to keep the current situation in order to prevent confusion and wait and see how things might change. He suggested staying on daylight saving time year-round.

3. Rep. Schultz, co-sponsor, spoke in support.

Rep. Schultz cited safety and health considerations. She felt that even one-hour change can have serious effects on health. The twice-a-year change is disruptive. She felt that the confusion issue was something people could deal with without problems.

Public hearing recessed at 10:45 a.m.

To be continued to public hearing scheduled on February 18, 2021.

FEBRUARY 18th – CONTINUED Public Hearing

HB 85 relative to using Atlantic Standard Time in New Hampshire. (This hearing was recessed on Feb. 11. It was reopened at 10:00, Feb. 18 and closed at 11:05)

4. Scott Yates, member of the public from Denver, Colorado, spoke in favor.

This is a hobby with him which he does because no one else is doing it. He has advocated in several states and feels that the changing of the clocks twice a year has bad health effects. He is less concerned about what actual time is chosen. He cites the Uniform Time Act of 1966 and says he is aware that there are problems for broadcasters and that it would need federal permission. He cites there is increasing interest to “lock the clock” in several states and federally. He took questions.

5. Scott Spradling, representing the NH Association of Broadcasters, testified in opposition.

He says that many of the 96 stations he represents share content across state lines; that this proposal has seen different forms over the years and is of concern to an industry “based on the clock.” He urges a federal solution rather than a state piecemeal approach. He says that broadcasting is done from a hub which is NYCity. There would be economic harm to our broadcasters because we would have created a fifth time zone. He described advertising revenue dependence in terms of prime-time audience reach. Using PBS as an example, he said an hour shift would mean that NH viewer could watch the same program not on a NH station. He described the problem of syndicated programs and local broadcasting being misaligned in radio locations broadcasting to both NH and VT. He also mentions the AM band federal requirements of shutting down at a particular time. He took questions, and elaborated on the interlocking geographical contingencies. He also suggested that if states passed resolutions, that could pressure the federal government to take notice.

6. Tom Emswiler, member of the public from Quincy, spoke in favor.

He cited local time changes that had been approved by DOT. He mentioned the situation of Arizona’s time situation. He said any such changes should be made thoughtfully. He was on a Mass. Commission that studied this situation and voted in favor of going to the Atlantic time zone.

7. Jay Pea, of Save Standard Time, spoke in opposition.

He said that objectively we belong in the Eastern time zone. He cited health reasons and noted many national organizations were opposed.

Respectfully submitted by,

**Rep John Sytek
Committee Clerk**

House Remote Testify

Executive Departments and Administration Committee Testify List for Bill HB85 on 20

Support: 16 Oppose: 6 Neutral: 2 Total to Testify: 6

<u>Name</u>	<u>Email Address</u>	<u>Phone</u>	<u>Title</u>	<u>Representing</u>	<u>Position</u>	<u>Testifying</u>	<u>Time</u>
Yokela, Josh	josh.yokela@leg.state.nh.us	603.722.0501	An Elected Official	Rockingham 33	Support	Yes (5m)	2
Yates, Scott	SCOTT@YATES.NET	303.801.7700	A Member of the Public	Myself	Support	Yes (4m)	2
Emswiler, Tom	tomems@gmail.com	202.270.6839	A Member of the Public	Myself	Support	Yes (3m)	2
Spradling, Scott	scott@spradlinggroup.com	603.724.8092	A Lobbyist	NH Association of Broadcasters	Oppose	Yes (3m)	2
Horrigan, NH State Rep. Timothy	timothy.horrigan@leg.state.nh.us	111.111.1111	An Elected Official	Strafford 6	Oppose	Yes (2m)	2
Schultz, Kris	kris.schultz@state.leg.nh.us	603.856.7279	An Elected Official	Merr.18 - Concord Ward 9	Support	Yes (2m)	2
Vail, Suzanne	Suzanne.vail@leg.state.nh.us	111.111.1111	An Elected Official	Hillsborough County 30	Support	No	2
Tango-Lowy, Torene	torene.k.tango-lowy@dnr.nh.gov	111.111.1111	State Agency Staff	Myself	Neutral	No	2
Layon, Erica	erica.layon@leg.state.nh.us	603.479.9595	An Elected Official	Myself	Support	No	2
See, Alvin	absee@4Liberty.net	111.111.1111	A Member of the Public	Myself	Support	No	2
Rathbun, Eric	ericsrathbun@gmail.com	111.111.1111	A Member of the Public	Myself	Neutral	No	2
Healey, Barbara	Barbara3821@aol.com	111.111.1111	A Member of the Public	Myself	Support	No	2
Ladd, Carl	dr.carl.ladd@gmail.com	111.111.1111	A Member of the Public	Myself	Support	No	2
Worsowicz, Paul	worsowicz@gcglaw.com	111.111.1111	A Lobbyist	Motion Picture Association	Oppose	No	2
Cutting, Sarah	scutting@sau4.org	111.111.1111	A Member of the Public	Myself	Oppose	No	2
Mennella, Alexandra	amennella1@protonmail.com	111.111.1111	A Member of the Public	Myself	Oppose	No	2
Medina, CJ	claryssa27@yahoo.com	111.111.1111	A Member of the Public	Myself	Support	No	2
Thomas, Nicholas	nicholas.w.thomas@uconn.edu	111.111.1111	A Member of the Public	Myself	Support	No	2
Alleman, Bill	gencourt@allemanse.com	603.529.4446	A Member of the Public	Myself	Support	No	2
Wuelper, Rep Kurt	kurt.wuelper@leg.state.nh.us	603.970.0783	An Elected Official	Strafford 3	Support	No	2
McWilliams, Rebecca	rebecca.mcwilliams@leg.state.nh.us	603.227.6494	An Elected Official	Merrimack 27	Support	No	2
Gould, Rep. Linda	lgouldr@myfairpoint.net	603.472.3877	An Elected Official	Myself	Oppose	No	2
Lekas, Alicia	rep.alicia.lekas@gmail.com	603.881.8960	An Elected Official	Hillsborough 37	Support	No	2
Wikstrom, Kathleen	kjwikstrom@gmail.com	501.912.2626	A Member of the Public	Myself	Support	No	2

HB 85 relative to using Atlantic Standard Time in New Hampshire. (This hearing was recessed on Feb. 11. It was reopened at 10:00, Feb. 18 and closed at 11:05)

>Scott Yates, member of the public from Denver, Colorado, spoke in favor. This is a hobby with him which he does because no one else is doing it. He has advocated in several states and feels that the changing of the clocks twice a year has bad health effects. He is less concerned about what actual time is chosen. He cites the Uniform Time Act of 1966 and says he is aware that there are problems for broadcasters and that it would need federal permission. He cites there is increasing interest to “lock the clock” in several states and federally. He took questions.

>Scott Spradling, representing the NH Association of Broadcasters, testified in opposition. He says that many of the 96 stations he represents share content across state lines; that this proposal has seen different forms over the years and is of concern to an industry “based on the clock.” He urges a federal solution rather than a state piecemeal approach. He says that broadcasting is done from a hub which is NYCity. There would be economic harm to our broadcasters because we would have created a fifth time zone. He described advertising revenue dependence in terms of prime-time audience reach. Using PBS as an example, he said an hour shift would mean that NH viewer could watch the same program not on a NH station. He described the problem of syndicated programs and local broadcasting being misaligned in radio locations broadcasting to both NH and VT. He also mentions the AM band federal requirements of shutting down at a particular time. He took questions, and elaborated on the interlocking geographical contingencies. He also suggested that if states passed resolutions, that could pressure the federal government to take notice.

>Tom Emswiler, member of the public from Quincy, spoke in favor. He cited local time changes that had been approved by DOT. He mentioned the situation of Arizona’s time situation. He said any such changes should be made thoughtfully. He was on a Mass. Commission that studied this situation and voted in favor of going to the Atlantic time zone.

>Jay Pea, of Save Standard Time, spoke in opposition. He said that objectively we belong in the Eastern time zone. He cited health reasons and noted many national organizations were opposed.

House Remote Testify

Executive Departments and Administration Committee Testify List for Bill HB85 on 20

Support: 8 Oppose: 3 Neutral: 0 Total to Testify: 2

<u>Name</u>	<u>City, State</u> <u>Email Address</u>	<u>Title</u>	<u>Representing</u>	<u>Position</u>	<u>Testifying</u>	<u>S</u>
Yates, Scott	SCOTT@YATES.NET	A Member of the Public	#LockTheClock	Support	Yes (4m)	2
Emswiler, Tom	tomems@gmail.com	A Member of the Public	Myself	Support	Yes (3m)	2
Demita, Deb	battleraven1@gmail.com	A Member of the Public	Myself	Support	No	2
Fabian, Awilda	Awildafl74@msn.com	A Member of the Public	Myself	Support	No	2
Mennella, Alexandra	Hooksett, NH amennella1@protonmail.com	A Member of the Public	Myself	Oppose	No	2
Axelman, Elliot	HOOKSETT, NH aluaxelman@gmail.com	A Member of the Public	Myself	Support	No	2
Groetzinger, Tonda	Farmington, NH groetzinger6@aol.com	A Member of the Public	Myself	Support	No	2
Pea, Jay	San Francisco, CA jay@savestandardtime.com	A Lobbyist	Save Standard Time	Oppose	No	2
Lekas, Alicia	Hudson, NH rep.alicia.lekas@gmail.com	An Elected Official	Hillsborough 37	Support	No	2
Perry, Apryl	Antrim, NH apryl.perry@unh.edu	A Member of the Public	Myself	Oppose	No	2
McWilliams, Rebecca	rebecca.mcwilliams@leg.state.nh.us	An Elected Official	Merrimack 27	Support	No	2

Testimony

Executive Departments and Administration

Testimony

February 11, 2021

HB 606 - AN ACT exempting services provided without remuneration from license requirements for barbering, cosmetology, and esthetics.

Dear Madam Chair and Members of the Committee:

My name is Vincent Baiocchetti and I am a Barber, licensed in the State of New Hampshire and I am here to testify in **opposition** to HB606 which would exempt services provided without remuneration from license requirements for barbering, cosmetology, and esthetics.

I believe I understand the intent of this bill is to maybe allow immediate family members to perform services on their own family members; such as parents giving their children haircuts. While I certainly agree with this, what I see is that this bill, the way it is written, allows people without licenses or education, to perform services on people who are not related to them.

This is not a money issue, there is plenty of work to go around, I would caution you that this is a safety and sanitation issue.

A licensed Barber, Cosmetologist or Esthetician must go through an approved course or apprenticeship. In our training, besides learning how to provide services, we must also learn and are tested on, sanitation, chemistry, anatomy and physiology, as well as issues with, and disease of, the scalp, skin, etc. Some of the topics that we learn are hair diseases that are primarily associated with the follicles of the hair and scalp, head lice, dermatitis, how to properly mix chemicals so the hair and head of a person is not burned or scarred, alopecia, folliculitis, just to name a few.

We all learn sanitation procedures because we want to prevent the spread of diseases such as HIV, hepatitis, staph infections, folliculitis (also known as Barber's Itch), tinea capitis, a fungal infection, impetigo, a bacterial infection, lice, tetanus, again, just to name a few.

I am a traveling Barber, most of my clients are in medical facilities, correctional facilities or are elderly or infirmed and unable to leave their house, this kind of service is allowed by law. The difference between myself and someone who is not trained and licensed, is that I have not only the proper equipment to cut hair, shave faces and perform the services that I am allowed to and was trained for, but my instruments, combs and other equipment are properly cleaned and sanitized after every service, helping to prevent the spread of disease or causing illness or injury to my clients.

What I would suggest is that this bill be changed to allow these services to be provided by and to immediate family members only. I have seen and know people that will provide services to others and not accept any "renumeration", to follow the law, but will be compensated in other methods so as to claim that they are not being paid for the services that they provide. I see this as a way to circumvent the law and is similar to past bills that have been sponsored to do away with licensing for the services that we currently provide.

This is not about cutting hair because in all honesty, I have seen people that are not licensed give great services and licensed people give terrible services. But all of the licensed professionals are educated and tested on the real important part of performing these services; preventing their clients from becoming ill or severely injured.

If you want to allow Mom and Dad to cut their kid's (or each other's hair), take some box coloring and do their hair or paint their fingernails, I as a trained professional have no issues with that. It is the allowing of unlicensed people to cut/color individual's hair, wax and put chemicals on people's skin and scalp with no education or training in the proper application and safety of the service.

I would ask that you oppose this bill as written and vote it ITL.

Thank you for your time and attention in this matter.

Sincerely,

/s/

Vincent Baiocchetti

Archived: Wednesday, April 7, 2021 1:28:33 PM

From: [Jean](#)

Sent: Monday, February 15, 2021 10:08:36 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

I call on all members of this committee to strenuously oppose a bill that limits speech so egregiously and dangerously as HB544 does. The idea that government would label whole categories of information or subject matter off-limits when it comes to training, grants, and contracts is both reprehensible and a magnet for an enormous range of lawsuits, both on constitutional and workforce matters.

As someone who has experienced discrimination in the workplace and also advocated for people very likely to experience workplace discrimination based on disability, gender identity, sexual orientation, and race, I assure you all that information and education do not divide. They illuminate and brings those who otherwise couldn't work together, into the workforce together, safely and equitably.

Sincerely,

Jean Lewandowski
Nashua Ward 5

Sent from [Mail](#) for Windows 10



MOTION PICTURE ASSOCIATION, INC.
1600 EYE STREET, NORTHWEST
WASHINGTON, D.C. 20006
(202) 293-1966

MEMORANDUM IN OPPOSITION TO NEW HAMPSHIRE HOUSE BILL 85

- The Motion Picture Association of America, on behalf of the broadcast affiliates of its member companies, which includes NBC, ABC, CBS, and Fox, respectfully opposes House Bill 85.
- This bill would put New Hampshire residents woefully out of step with the rest of the states in the Eastern Time Zone, by requiring them to conform permanently to Atlantic Standard Time.
- Broadcasters may be forced to air their current programming one hour earlier than New Hampshire residents have come to rely upon.
- The well-ingrained viewing habits of New Hampshire residents would likely be disrupted. Viewers accustomed to watching their favorite news and other programming would have to adjust to their much-anticipated and relied-upon programming occurring at different times, times at which they may be unable to view because of unalterable work schedules and other previous commitments.
- Many people plan their lives around their favorite TV programming. To have the timing of it changed would not only disappoint New Hampshire residents, but it would disrupt viewing habits and patterns, and lead to decreased viewership in many cases.
- It would be impossible for broadcasters to compensate for the decline in advertising revenue that such a decline in viewership would certainly precipitate.
- We respectfully submit that such a move to permanent Atlantic Standard Time is bad for New Hampshire residents and bad for the broadcasters who serve the state, and we urge the New Hampshire legislature to defeat this bill.



NEW HAMPSHIRE ASSOCIATION OF BROADCASTERS

Tracy Caruso, Executive Director, NHAB
PO Box 5578
Manchester, NH 03108

To the Members of the House ED&A Committee:

On behalf of the state's radio and television stations, I am writing to urge you to reject HB 85, relative to using the Atlantic Time Zone in New Hampshire. This proposal would wreak havoc with many of the schedules and broadcasts of our member stations and create an undue burden on our ability to entertain and inform our viewers and our listeners. NHAB is not opposed to the idea of shifting an hour ahead to the Atlantic Time Zone. It is the way in which this legislation implements the change state-by-state that causes broadcasters such great concern.

For example, if approved, three states (Maine, Massachusetts and New Hampshire) would have broadcast schedules one hour ahead of neighboring states. This will upset broadcast start times, including live broadcasts and major sporting events such as the NFL, NBA, NHL and MLB.

There is the issue of the syndication of programs that all of the radio broadcasters carry simultaneously. If some states go forward with this, radio stations will have a considerable amount of disruption to the listener ratings data, known as BOSTON DMA, which includes MA, NH, RI, ME and VT. This data is what sets ad rates for various shows and time segments.

WMUR's General Manager Jeff Bartlett says prime time, the most lucrative revenue window for evening programming, would start at 9pm not 8pm for New Hampshire, which would dramatically impact revenues and sales schedules. National networks feed content to affiliates at the same specific time to all states in the Eastern Time Zone. Asking major networks and every cable channel to create a new feed for three states would not be likely.

Live programs would all run at different times. Good Morning America would start at 8am not 7am. World News Tonight would run at 7:30. Primetime football games would all start an hour later, which means you're watching games to the end around midnight or 1am local time.

At NH Public Television, all national programs would begin an hour later than the rest of the surrounding states which would undoubtedly cost views, and as a viewer-supported station, relying heavily on donations from the public, this would have a dramatic and catastrophic effect on fundraising and revenues.



NEW HAMPSHIRE ASSOCIATION OF BROADCASTERS

Radio impacts are also dramatic. Matt Houseman, General Manager at Great Eastern Radio, located in the Hanover area, oversees multiple stations on the state line with Vermont. If NH is an hour ahead of VT, Houseman is not sure how to schedule the two stations with time zone differences and a mixture of live and pre-produced programs colliding throughout the day. A prime example would be that WHDQ is a Greg & The Morning Buzz affiliate, along with WKKN and WRFK/WWFK licensed in VT. This popular morning show currently runs from 6-10 am. If the NH program starts an hour later in New Hampshire, as a live program it would really be difficult to manage considering it starts at a different hour in Vermont. It throws the entire broadcast schedule off.

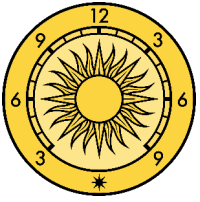
NH has several AM stations that are either directional or daytime-only. These stations have certain power levels and/or directional patterns that they must maintain for the hours between local sunrise and sunset and local sunset and sunrise. Some stations even have certain parameters during what the FCC calls “critical hours”, which is two hours after sunrise and two hours before sunset. A one-hour time difference will be a nightmare for AM’s that share frequencies with stations in other states.

As a region that is passionate about its professional sports teams, anyone who has ever dealt with orphan counties, blackouts, or other sports-related TV issues knows there’s nothing more important than sports scheduling. Games would start well after bedtime on the East Coast, and international programming like the Olympics – for which contracts are set long in advance – would be thrown into chaos. Same goes for other popular live shows like the Oscars.

A national conversation is a more favorable way to make this change than for states to go it alone or in small, random clusters. Although less certain and more difficult to achieve, from the broadcasters’ perspective, this is a conversation that **MUST** be done at the federal level, with the entire time zone considering the implications, not just a coalition of states. We recommend state leaders consult with Congressional leaders to make time zone adjustments that make sense for the entire country. Please vote no on HB 85.

Sincerely,

Tracy Caruso, Executive Director, NHAB



SAVE STANDARD TIME

SaveStandardTime.com • Twitter.com/SaveStandard • info@SaveStandardTime.com • San Francisco, California

2021 February 9

New Hampshire House of Representatives
Executive Departments & Administration Committee
Concord, New Hampshire 03301

Re: HB-85: Oppose—Amend to permanent Eastern Standard Time

Dear Honorable Legislators,

Thank you for your commitment to the well-being of all in New Hampshire. I write on behalf of my nonprofit to ask you oppose HB-85, to refer it to the Committees on Health, Children, and Education, and to recommend its amendment to permanent Eastern Standard Time (draft amendment attached).

HB-85 seeks permanent Atlantic Standard Time, which is permanent Eastern Daylight Saving Time (DST) at New Hampshire's longitude. Science and history show permanent DST to be more harmful than clock change. Permanent Eastern Standard Time can instead improve health with better sleep, it will protect start times with morning sunlight, and it is pre-approved by the US 1966 Uniform Time Act.

Scores of organizations representing thousands of scientists/doctors and millions of teachers/parents oppose permanent DST and endorse permanent Standard Time. These include the National PTA, National Safety Council, American Academy of Sleep Medicine, American College of Chest Physicians, American College of Occupational & Environmental Medicine, Start School Later, American Academy of Dental Sleep Medicine, and Society for Research on Biological Rhythms.^{[AASM][CSC][ESRS][RIVM][SRBR]}

The CDC has declared sleep deprivation to be a nationwide epidemic.^[Jin] Springing clocks forward to DST acutely deprives sleep. Leaving clocks forward on DST chronically deprives sleep (average 19 minutes nightly). An hour delay of sunrise each day (such as by DST) manifests as statistically significant increases in accidents, diseases (cancers up 12–36%), and healthcare costs, and as statistically significant decreases in education, productivity, and wages (down 3–5%). It's not just clock change that harms. Longitudinally correct Standard Time preserves morning sunlight, when human biology needs it most.^{[AASM][Borisenkov][CSC][Curtis][ESRS][Gibson][Giuntella][Gu][Jenkins][Juda][RIVM][Roenneberg][SRBR][Watson]}

Scientific polling shows strong public support to end clock change, with slight preference for Standard Time.^[AP] History shows public support for permanent DST reverses to opposition once its dark winter mornings are experienced.^{[BBC][Ripley][Yorkshire]} Permanent DST would delay New Hampshire's sunrises past 8:20am, and past 8am for 2.2 months. Biologists urge school

should start no earlier than 8am or 8:30am Standard Time—which is 9am or 9:30am DST. Permanent DST would undo the benefits of starting school later, and disrupt parents' work hours.^{[Cell Press][Skeldon & Dijk]} Standard Time keeps sunrises before 8am, when most work/school starts,^{[CDC][Silver]} for healthier sunlight exposure, circadian alignment, sleep, alertness, immunity, and productivity.

Please listen to history and to the consensus of biologists and teachers. Oppose HB-85 until it is amended to permanent Eastern Standard Time.

Sincerely yours,



Jay Pea
Save Standard Time
PO Box 40238
San Francisco, California 94140
jay@SaveStandardTime.com
+1-415-484-3458

American Academy of Sleep Medicine (2020). "Call for Elimination of Daylight Saving Time". *Journal of Clinical Sleep Medicine*. <https://aasm.org/american-academy-of-sleep-medicine-calls-for-elimination-of-daylight-saving-time/>

AP-NORC (2019). "Daylight Saving Time vs Standard Time". *Center for Public Affairs Research*. <https://apnorc.org/projects/daylight-saving-time-vs-standard-time/>

BBC (2014). "Russia: Putin Abolishes 'Daylight Savings' Time Change". *BBC News*. <https://www.bbc.com/news/blogs-news-from-elsewhere-28423647>

Borisenkov et al (2016). "Seven-Year Survey of Sleep Timing in Russian Children and Adolescents". *Biological Rhythm Research*. https://www.researchgate.net/publication/307547013_Seven-year_survey_of_sleep_timing_in_Russian_children_and_adolescents_chronic_1-h_forward_transition_of_social_clock_is_associated_with_increased_social_jetlag_and_winter_pattern_of_mood_seasonality

Canadian Society for Chronobiology (2019). "Turn Back the Clock on Daylight Savings: Why Standard Time All Year Round Is the Healthy Choice". *The Globe and Mail*. <https://www.theglobeandmail.com/opinion/article-turn-back-the-clock-on-daylight-savings-why-standard-time-all-year/>

Cell Press Staff (2019). "Permanent Daylight Savings May Cancel Out Changes to School Start Times". *EurekAlert!*. https://www.eurekalert.org/pub_releases/2019-04/cp-pds041819.php

Centers for Disease Control and Prevention (2015). "School Start Times for Middle School and High School Students – United States, 2011–12 School Year". *Morbidity and Mortality Weekly Report*. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a1.htm>

Curtis (2019). "Daylight Saving Time: Harmed by Hands of the Clock". *The Irish Times*. <https://www.irishtimes.com/opinion/daylight-saving-time-harmed-by-hands-of-the-clock-1.4064179>

European Sleep Research Society (2018). "Joint Statement". *EU Commission on DST*. <https://esrs.eu/joint-statement-to-the-eu-commission/>

Gibson & Shrader (2015). "Time Use and Productivity: The Wage Returns to Sleep". *Williams College Department of Economics Working Papers*. <https://econpapers.repec.org/paper/wilwileco/2015-17.htm>

Giuntella & Mazzonna (2017). "Sunset Time and the Economic Effects of Social Jetlag Evidence from US Time Zone Borders". *Journal of Health Economics*. <https://www.sciencedirect.com/science/article/abs/pii/S0167629618309718>

Gu et al (2017). "Longitude Position in a Time Zone and Cancer Risk in the United States". *Cancer Epidemiology, Biomarkers & Prevention*. <https://cebp.aacrjournals.org/content/26/8/1306>

Jin & Ziebarth (2019). "Sleep, Health, and Human Capital: Evidence from Daylight Saving Time". *The National Bureau of Economic Research*. <https://ideas.repec.org/p/yor/hectdg/15-27.html>

Juda et al (2019). "An Open Letter to the BC Government in Support of Permanent Standard Time". *Simon Fraser University*. <https://vault.sfu.ca/index.php/s/sAnv3Z4bcSwY4Gm>

Ripley (1974). "Senate Votes Return to Standard Time for Four Months and Sends Bill to Ford". *The New York Times*. <https://www.nytimes.com/1974/10/01/archives/senate-votes-return-to-standard-time-for-four-months-and-sends-bill.html>

RIVM (2019). "Standard Time More Beneficial for Public Health Than Summer Time". *Rijksinstituut voor Volksgezondheid en Milieu*. <https://www.rivm.nl/en/news/standard-time-more-beneficial-for-public-health-than-summer-time>

Roenneberg et al (2019). "Daylight Saving Time and Artificial Time Zones – A Battle Between Biological and Social Times". *Frontiers in Physiology*. <https://www.frontiersin.org/articles/10.3389/fphys.2019.00944/full>

Silver (2014). "Which Cities Sleep In, and Which Get to Work Early". *FiveThirtyEight*. <https://fivethirtyeight.com/features/which-cities-sleep-in-and-which-get-to-work-early/>

Skeldon & Dijk (2019). "School Start Times and Daylight Saving Time Confuse California Lawmakers". *Current Biology*. [https://www.cell.com/current-biology/fulltext/S0960-9822\(19\)30312-4](https://www.cell.com/current-biology/fulltext/S0960-9822(19)30312-4)

Society for Research on Biological Rhythms (2019). "Why Should We Abolish Daylight Saving Time?". *Journal of Biological Rhythms*. <https://srbr.org/advocacy/daylight-saving-time-presskit/>

Watson (2019). "Time to Show Leadership on the Daylight Saving Time Debate". *Journal of Clinical Sleep Medicine*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6557642/?report=classic>

Yorkshire (2018). "British Summer Time: Why Do We Change the Clocks?". *Yorkshire Evening Post*. <https://www.yorkshireeveningpost.co.uk/news/uk-news/british-summer-time-why-do-we-change-clocks-313791>

Atlantic Standard Time in New Hampshire is Eastern Daylight Saving Time.

"Permanent Standard Time is the only fair, viable option."

"Permanent Daylight Saving could create real health/safety issues. Humans require adequate morning light so that our internal biological rhythms synchronize properly to local time. Lack leads to metabolic disorders, depression, cardiovascular disease..."

Chancellor Gene Block PhD, UCLA
Prof Johanna Meijer PhD, Leiden University

<https://newsroom.ucla.edu/stories/who-wants-to-go-to-work-in-the-dark>



SAVE STANDARD TIME

"The human circadian system does not adjust to Daylight Saving Time."

Sleep becomes disrupted, less efficient, and shortened. Permanent Standard Time is the healthier, more natural choice."

Nathaniel F Watson MD MSc
Neurology Professor, University of Washington, Seattle

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6557642/>



SAVE STANDARD TIME

Most work/school starts at 8am.

How would you rather start your day half the year?



Permanent Standard Time is the safest, healthiest, quickest end to clock change.



SAVE STANDARD TIME

8:03am average school start in the US. CDC, US ED, SASS, 2015. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a1.htm>
7:55am median work arrival in the US. S38, ACS, USCB, 2014. <https://livefortyeight.com/features/which-cities-sleep-in-and-which-get-to-work-early/>

Most work/school starts at 8am.

How would you rather start your day half the year?



Permanent Standard Time is the safest, healthiest, quickest end to clock change.



SAVE STANDARD TIME

8:03am average school start in the US. CDC, US ED, SASS, 2015. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a1.htm>
7:55am median work arrival in the US. S38, ACS, USCB, 2014. <https://livefortyeight.com/features/which-cities-sleep-in-and-which-get-to-work-early/>

"Cancer rates significantly increase when sunrise is later."

"Permanent DST would make sunrise later, while permanent Standard Time would make sunrise closer to body time."

Nicolas Cermakian PhD
President, Canadian Society for Chronobiology

<https://www.theglobeandmail.com/opinion/article/turn-back-the-clock-on-daylight-savings-why-standard-time-all-year/>



SAVE STANDARD TIME

"National PTA is opposed to Daylight Saving Time during the winter months because of the safety factor."

Heidi May Wilson
Spokesperson for the National Parent Teacher Association

<https://www.washingtonpost.com/science/2019/03/08/springing-forward-daylight-saving-time-is-obsolete-confusing-unhealthy-critics-say/>



SAVE STANDARD TIME



SAVE STANDARD TIME

SaveStandardTime.com • Twitter.com/SaveStandard • info@SaveStandardTime.com • PO Box 40238, San Francisco CA 94140

Endorsements of Permanent Standard Time as the Better Year-Round Clock

The following parties reject permanent Daylight Saving Time and endorse permanent Standard Time as the better year-round clock. These are not implied to be endorsements of the Save Standard Time entity.

Organizations (non-comprehensive list)

National PTA	National Education Association
National Safety Council	American Academy of Sleep Medicine
American College of Chest Physicians	American Federation of Teachers
National School Boards Association	American College of Occupational & Environmental Medicine
B-Society	Start School Later
American Academy of Dental Sleep Medicine	Rabbinical Council of America
European Sleep Research Society	Society for Research on Biological Rhythms
Agudath Israel of America	Florida PTA
Society of Anesthesia & Sleep Medicine	World Sleep Society
German Teachers' Association	European Biological Rhythms Society
French Society for Sleep Research & Medicine	Society of Behavioral Sleep Medicine
National Commission for the Rationalization of Spanish Hours	American Academy of Cardiovascular Sleep Medicine
California Islamic University	Agudath Israel of Florida
Society for Light Treatment & Biological Rhythms	Francophone Chronobiology Society
Rabbinical Council of California	Association of Canadian Ergonomists
Agudath Israel of California	Good Light Group
Northwest Noggin Neuroscience	Agudath Israel of Chicago
California Sleep Society	Daylight Academy
Michigan Academy of Sleep Medicine	Kentucky Sleep Society
Ohio Bicycle Federation	Maryland Sleep Society
Wisconsin Sleep Society	Australasian Chronobiology Society
Canadian Society for Chronobiology	Cuyahoga Astronomical Association
Southern Sleep Society	Adath Israel San Francisco
Normal Time All the Time	Tennessee Sleep Society
German Society for Time Policy	Curtis Clock Lab
Missouri Sleep Society	Capitol Neurology
Solaris Fatigue Management	Stephens Memorial Observatory
Sleep Medicine Association Netherlands	Dutch Society for Sleep-Wake Research
Chronobiology Lab Groningen	Dakotas Sleep Society
Better Times Platform	Abolish Time Change!
Barcelona Time Use Initiative for a Healthy Society	

Individuals (non-comprehensive list)

Raúl Aguilar-Roblero MD PhD, Laboratory on Circadian Rhythmicity, Institute of Cellular Physiology, Mexico
Konstantin V Danilenko MD PhD, Institute of Physiology & Basic Medicine, Novosibirsk, Russia
Elizabeth B Klerman MD PhD, Associate Professor, Harvard Medical School, Boston, Massachusetts
Michael T Lam MD PhD, San Diego, California
Michael McCarthy MD PhD, Center for Circadian Biology, University of California, San Diego
Thomas E Nordahl MD PhD, Professor Emeritus, University of California, Davis
David K Welsh MD PhD, Professor Emeritus, University of California, San Diego
Amir Zarrinpar MD PhD, Assistant Professor, San Diego, California
Salman Ahsan PhD, San Jose, California
Shimon Amir PhD, Professor, Concordia University, Montreal, Quebec
Sonia Ancoli Israel PhD, Professor Emeritus, University of California, San Diego

Michael Antle PhD, Professor, Hotchkiss Brain Institute & University of Calgary, Alberta
 Susanna Barry PhD, College Mental Health Counselor & Sleep Coach, Cambridge, Massachusetts
 William Bechtel PhD, Distinguished Professor, University of California, San Diego
 Mikhaïl Borisenkov PhD, Institute of Physiology, Komi Science Centre, Russian Academy of Sciences
 Joseph Boyd PhD, Research Scientist, MilliporeSigma, Temecula, California
 Hugo Calligaro PhD, San Diego, California
 Oscar Castanon-Cervantes PhD, Assistant Professor, Morehouse School of Medicine, Atlanta, Georgia
 Joanna C Chiu PhD, Vice Chair, Department of Entomology & Nematology, University of California, Davis
 Scott Cookson PhD, Quantitative BioSciences, San Diego, California
 Jason DeBruyne, PhD, Associate Professor, Morehouse School of Medicine, Atlanta, Georgia
 Grant Denn PhD, Physics Department Chair, Metropolitan State University of Denver, Colorado
 Heinz Freisling MSc PhD, Epidemiologist, International Agency for Research on Cancer, Lyon, France
 Frederic Gachon PhD, Group Leader, Physiology of Circadian Rhythms, Institute for Molecular Bioscience
 Susan S Golden PhD, Director, Center for Circadian Biology, University of California, San Diego
 Marijke CM Gordijn MS PhD, Chrono@Work, University of Groningen, Netherlands
 Bill Griesar PhD, Northwest Noggin Neuroscience Outreach Group, Portland, Oregon
 Liz Harrison PhD, Center for Circadian Biology, University of California, San Diego
 Dietrich Henckel PhD, Professor, Technical University of Berlin, Germany
 Erik Herzog PhD, Professor of Biology, Washington University, St Louis, Missouri
 Myriam Juda PhD, Researcher, Simon Fraser University, Vancouver, British Columbia
 Achim Kramer PhD, Professor of Chronobiology, Charité – Universitätsmedizin Berlin, Germany
 Camilla Kring PhD, Speaker, Author, & Entrepreneur, Copenhagen, Denmark
 Katja Lamia PhD, Associate Professor of Molecular Medicine, Center for Circadian Biology, UC San Diego
 Andy LiWang PhD, University of California, Merced
 Travis Longcore PhD, Institute of the Environment & Sustainability, University of California, Los Angeles
 Emily Manoogian PhD, Postdoctoral Fellow, San Diego, California
 Peter Mansbach PhD, Bethesda, Maryland
 Erik Maronde PhD, Scientist, Frankfurt, Germany
 Girish Melkani MS PhD, Associated Research Professor, San Diego, California
 Martha Merrow PhD, Professor of Chronobiology, Ludwig Maximilian University of Munich, Germany
 Matt Metzgar PhD, Clinical Professor of Economics, University of North Carolina, Charlotte
 Ralph Mistlberger PhD, Professor, Simon Fraser University, Vancouver, British Columbia
 João Nunes PhD, Biochemistry Researcher, Dresden, Germany
 Marie Pariollaud PhD, Postdoctoral Associate, Scripps Research, La Jolla, California
 Ketema Paul, PhD, University of California, Los Angeles
 Linda Petzold PhD, Professor, University of California, Santa Barbara
 Frank Powell PhD, Professor of Medicine, University of California, San Diego
 Kendall Satterfield PhD, San Diego, California
 Dorothy D Sears PhD, San Diego, California
 Benjamin Smarr PhD, Professor of Bioengineering & Data Science, University of California, San Diego
 Andrea Smit PhD, Researcher, Simon Fraser University, Vancouver, British Columbia
 Barbara Sorg PhD, Legacy Research Institute, Portland, Oregon
 Andrew Steele PhD, Associate Professor of Biological Sciences, California State Polytechnic University
 Jennifer Thomas PhD, Professor, San Diego, California
 Gianluca Tosini PhD, Chief Scientific Research Officer, Morehouse School of Medicine, Atlanta, Georgia
 Roger Tseng PhD, Biological Scientist, USDA, Ames, Iowa
 Judy Village PhD CCCPE, President, Association of Canadian Ergonomists, British Columbia
 Daniel S Whittaker PhD, Los Angeles, California
 Anna Wirz-Justice PhD, Professor Emeritus, Centre for Chronobiology, University of Basel, Switzerland
 Irving Zucker PhD, University of California, Berkeley
 Mariah Baughn MD, San Diego, California
 Richard E Cytowic MD, Washington, DC
 Mona Ezzat MD, San Diego, California
 John F Gottlieb MD, Clinical Assistant Professor of Psychiatry & Behavioral Sciences, Chicago, Illinois
 Royan Kamyar MD, Physician, La Mesa, California
 Jack Kruse DMD MD, Neurosurgeon, New Orleans, Louisiana
 Beth Malow MD MS, Medical Doctor & Researcher, Brentwood, Tennessee
 Tessa Sugarbaker MD MFT, San Francisco, California
 Nathaniel F Watson MD MSc, Bainbridge Island, Washington
 Dr Archana G Chavan, University of California, Merced
 Dr Chelsea Gustafson, Assistant Professor, Portland, Oregon
 Dr Paul Kelley, Milton Keynes, United Kingdom
 Dr Irving Lebovics, Los Angeles, California
 Prof Stacey Harmer, University of California, Davis
 Betty C Jung MPH RN MCHES, New Haven, Connecticut
 Fabian Mohedano, President of Catalan Council for Vocational Training, Former Member of Parliament
 Prof Kurt Niel, Grieskirchen, Austria

HB 85 - PROPOSED AMENDMENT

2021 SESSION

21-0211
05/08

HOUSE BILL **85**

AN ACT relative to using permanent Eastern Standard Time in New Hampshire.

SPONSORS: Rep. Yokela, Rock. 33; Rep. Yakubovich, Merr. 24; Rep. A. Lekas, Hills. 37; Rep. Schultz, Merr. 18; Rep. Hill, Merr. 3

COMMITTEE: Executive Departments and Administration

ANALYSIS

This bill provides that New Hampshire will use Eastern Standard Time throughout the calendar year if Massachusetts and Maine also move to permanent Eastern Standard Time.

Explanation: Matter added to current law appears in ***bold italics***.

Matter removed from current law appears ~~[in brackets and struck through.]~~

Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

21-0211
05/08

STATE OF NEW HAMPSHIRE

In the Year of Our Lord Two Thousand Twenty One

AN ACT relative to using Atlantic Standard Time in New Hampshire.

Be it Enacted by the Senate and House of Representatives in General Court convened:

1 Standard Time; Change to permanent Eastern Standard Time. Amend RSA 21:36 to read as follows: 21:36 Standard Time. The standard time within the state, except as hereinafter provided, shall be based on the mean astronomical time of the seventy-fifth degree of longitude west from Greenwich, known and designated by the federal statute as "Eastern Standard Time." ~~[At 2 o'clock ante meridian of the second Sunday in March of each year, the standard time in this state shall be advanced one hour, at 2 o'clock ante meridian of the first Sunday in November of each year, the standard time in this state shall, by the retarding of one hour, be made to coincide with the astronomical time hereinbefore described as Eastern Standard Time, so that between the second Sunday in March at 2 o'clock ante meridian and the first Sunday in November at 2 o'clock ante meridian in each year the standard time in this state shall be one hour in advance of the United States Standard Time]~~ In all laws, statutes, orders, decrees, rules, and regulations relating to the time of performance by any officer or department of this state, or of any county, city, town, or district thereof, or relating to the time in which any rights accrue or determine, or within which any act shall or shall not be performed by any person subject to the jurisdiction of this state, or of any county, city, town, or district thereof, and in

all contracts or choses in action made or to be performed in this state, it shall be understood and intended that the time shall be as set forth in this section.

2 Application to the United States Department of Transportation. Within 180 days of the adoption of similar legislation by the states of Maine and Massachusetts, or on the date specified for similar action by either the state of Maine or Massachusetts, whichever is earlier, the governor shall petition the United States Secretary of Transportation to move the state of New Hampshire to permanent Eastern Standard Time.

3 Contingency. Section 1 of this act shall take effect on the first December 1 after section 2 takes effect or the effective date specified by similar action by either the state of Maine or Massachusetts, whichever is earlier. Section 2 of this act shall take effect on the date that the states of Massachusetts and Maine enact similar legislation moving from the Eastern Time Zone to the Atlantic Time Zone. If Massachusetts and Maine do not adopt such legislation, sections 1 and 2 of this act shall not take effect.

4 Effective Date.

I. Sections 1 and 2 of this act shall take effect as provided in section 3 of this act.

II. The remainder of this act shall take effect 60 days after its passage.



Report of the Special Commission on the Commonwealth's Time Zone

November 1, 2017

Contents

Executive Summary	3
Purpose of the Commission	6
Structure of the Commission	6
Background	8
Findings.....	12
Economic Development: Commerce and Trade.....	12
Labor and Workforce.....	14
Public Health.....	15
Energy	16
Crime and Criminal Justice.....	18
Transportation	19
Broadcasting	20
Education and School Start-Times	21
Recommendations	25
Regional Action	25
Later School Start-Times	26
Public Awareness.....	26
APPENDIX A: Individuals Invited to Testify	28
APPENDIX B: Meeting Minutes.....	29

Executive Summary

Purpose of the Special Commission

In the summer of 2016, the Legislature passed *An Act relative to job creation and workforce development*. Section 136 of the bill established a special commission with the purpose of conducting “a comprehensive study relative to the practical, economic, fiscal and health related impacts of the commonwealth remaining on Eastern Daylight Time, 4 hours behind coordinated universal time, also known as Atlantic Standard Time, throughout the calendar year.”

Structure of the Special Commission

The statute that established the special commission required that the commission consist of 11 members appointed by the governor, the speaker of the House, the president of the Senate, the House minority leader, and the Senate minority leader.

Background

Twice a year, as Massachusetts residents are reminded to set their clocks forward or back an hour, media outlets inundate the public with anecdotes and opinions about this practice. Until the formation of this Commission, however, the Commonwealth had not tasked any group with researching or analyzing the wisdom of maintaining the status quo of switching back-and-forth between daylight saving time (“DST”) and standard time.

The tradition of moving the clocks forward one hour and back one hour annually may appear longstanding, but DST was only introduced in the United States during World War I, and then federally abandoned (although intermittently used by some states) until 1966 when Congress passed the Uniform Time Act, which established DST as running from the last Sunday of April until the last Sunday in October. DST dates have been amended several times since 1966. The current dates for “springing forward” and “falling back” – the second Sunday in March and the first Sunday in November – have been in place since 2007.

One of 17 states in the Eastern Time Zone, Massachusetts currently follows Eastern Daylight Time (“EDT,” coordinated universal time minus 4 hours) when observing DST, and Eastern Standard Time (“EST,” coordinated universal time minus five hours) when observing standard time. Although DST is observed in 48 states (Hawaii and Arizona – with the exception of the Navajo Nation – do not participate), a surprising lack of uniformity exists around the world. DST is employed in only about 70 countries. Most of Africa and Asia do not observe DST, and South America is split, with many of its northern countries not observing DST, while nations like Paraguay and southern Brazil following DST. Even countries that observe DST have inconsistent start and end dates. For example, Canada follows the U.S.’s DST dates, Europe observes DST but switches its clocks a few weeks after the U.S., and parts of Australia that observe DST do so during the brighter months of the Australian year, October through April.

No mechanism exists through which Massachusetts could adopt year-round DST, as federal law only allows states to opt out of DST. But the state could effectively achieve that goal by moving

from the Eastern Time Zone to the Atlantic Time Zone and then opting out of DST. Several states are considering bills that would move them to year-round DST, including four of the five other New England states. If Massachusetts does move to the Atlantic Time Zone and opt out of DST, then the Commonwealth would be an hour ahead for roughly four months each year.

Findings

This Commission researched and evaluated the impact of DST to understand whether the inconvenience of changing clocks twice per year is fulfilling goals in various policy areas from energy to crime to public health. Following this analysis, the Commission considered whether Massachusetts should move to the Atlantic Time Zone (effectively observing year-round DST).

The Commission utilized a data-driven approach in reaching its findings and recommendations, relying on experts, academic papers, facts, and data. The Commission finds as follows:

- *Economic Development: Commerce and Trade.* The U.S. has a history of adjusting the clocks or the calendar to increase retail sales, and year-round DST has the potential to create economic growth in Massachusetts as people tend to shop, dine out, and engage in commercial activities more in after-work daylight. Year-round DST could also increase the state's competitiveness in attracting and retaining a talented workforce by mitigating the negative effects of Massachusetts' dark winters and improving quality-of-life.
- *Labor and Workforce.* Eliminating the spring transition to DST could increase productivity and cut down on both the number and severity of on-the-job injuries, which would lead to lower costs for businesses (e.g. more productivity, lower rates for workers' compensation insurance, and less need for hiring and training replacement workers).
- *Public Health.* Adopting year-round DST could improve public health in the Commonwealth by eliminating the annual spring transition to DST—and the corresponding increase in traffic fatalities, workplace injuries, and heart attacks—and also by providing residents with additional evening daylight during the winter, which would lead to increased physical activity among residents.
- *Energy.* Year-round DST has the potential to produce energy savings for Massachusetts residents. Due to the timing of those savings and New England's current energy portfolio, year-round DST could lead to meaningful reductions in both future energy costs and greenhouse gas emissions.
- *Crime and Criminal Justice.* Research suggests that year-round DST would reduce street crime, produce substantial social cost savings, and also reduce inequities within the criminal justice system.
- *Transportation.* Year-round DST could have a mixed impact on transportation, and create additional business complexity in moving goods and services. While year-round DST would lead to fewer traffic fatalities, unilateral action by Massachusetts would complicate interstate travel.

- *Broadcasting.* Year-round DST may have some negative effects on broadcasters and scheduled television programming unless other states also adopt year-round DST.
- *Education and School Start-Times.* With current school schedules remaining in place, year-round DST could pose a safety risk during the winter to children waiting for the school bus in the dark and to adolescents driving in the early morning. Those risks could be mitigated by delaying school start-times, which is a cost-effective way to alleviate safety concerns as well as improve students' physical and mental health, attendance and graduation rates, tardiness and dropout rates, and grades and standardized test scores.

Recommendations

Based on its research and findings, and after weighing the costs and benefits associated with the observance of time in Massachusetts, the Commission believes that, under certain circumstances, the Commonwealth could make a data-driven case for moving to the Atlantic Time Zone year-round (effectively observing year-round DST). Although there are appreciable costs associated with making this change, on balance the Commission finds that doing so could have positive benefits that largely stem from the absence of a spring transition to DST and the additional hour of winter evening daylight.

However, the Commission does not recommend a simple switch to the Atlantic Time Zone, and cautions that several qualifiers should accompany future conversations or legislative proposals with respect to how Massachusetts observes time. The Commission offers the following blueprint of concerns for a thoughtful implementation of year-round DST, should Massachusetts ever decide to pursue this policy change:

- *Regional action.* Massachusetts should only move to year-round DST if a majority of other Northeast states – possibly including New York – also do so. To facilitate regional action, the Legislature and Governor should raise this issue with other Northeastern legislative and executive bodies, including the National Conference of State Legislatures, the Council of State Governments, Coalition of Northeast Governors, and gatherings of New England Governors and Eastern Canadian Premiers.
- *Later school start-times.* Any move to year-round DST should be accompanied by statewide standards for delaying school start-times to mitigate safety issues; improve student academic performance, health, and well-being; and add significantly to the other economic benefits related to year-round DST.
- *Public awareness.* The Commonwealth should not adopt year-round DST unless it simultaneously commits funding to educate the public about the implications of the change. Even if Massachusetts does not adopt year-round DST, public awareness initiatives about transitions to and from DST would still be beneficial. For instance, public health announcements preceding the spring transition to DST would help residents prepare for the sleep loss caused by the transition so that they could try to mitigate its negative consequences.

Purpose of the Commission

In the summer of 2016, the Legislature passed *An Act relative to job creation and workforce development*. Section 136 of Chapter 219 of the Acts of 2016 established that:

[T]here shall be a special commission to conduct a comprehensive study relative to the practical, economic, fiscal and health related impacts of the commonwealth remaining on eastern daylight time, 4 hours behind coordinated universal time, also known as Atlantic standard time, throughout the calendar year. The commission shall focus on the impact to local and regional economies, education, public health, transportation, energy consumption, commerce and trade if the time zone is altered.

To carry out its purpose, the Commission held several public meetings during which it received testimony from a variety of experts and stakeholders. Experts reported on a variety of subjects, including the history of times zones in the United States, economic and retail development, criminal activity, the region's energy system, transportation, broadcasting, public health, and school start-time/student performance impacts related to daylight and time zones.

For a complete list of meeting participants, subject matters, and testimony offered, please refer to Appendices A and B of this report.

Structure of the Commission

The statute that established the Commission also delineated its structure and required that the Commission be made up of eleven members appointed as follows:

The commission shall be comprised of the following members: 3 members to be appointed by the governor, 1 of whom shall be a member of the executive office of health and human services and 1 of whom shall be a member of the executive office of education; 3 members to be appointed by the president of the senate, 1 of whom shall have expertise in economic development and 1 of whom shall have expertise in energy; 1 member to be appointed by the senate minority leader; 3 members to be appointed by the speaker of the house of representatives, 1 of whom shall have expertise in interstate commerce and 1 of whom shall have expertise in transportation; and 1 member to be appointed by the house minority leader.

In accordance with the statutory guidelines, the members of the Commission are:

Senate president appointments:

Senator Eileen Donoghue, Chair
First Middlesex District

Mr. Peter Shattuck (replaced by Ms. Amy Boyd in September 2017)
Acadia Center

Mr. Thomas Emswiler
Public health advocate

Speaker of the House appointments:

Representative Daniel Cahill
Tenth Essex District

Representative Michael Finn
Sixth Hampden District

Dr. Judith Owens
Director of the Center for Pediatric Sleep Disorders, Boston Children's Hospital

Governor appointments:

Mr. Tim Miley (replaced by Ms. Jennifer Barrelle in August 2017)
Department of Public Health

Mr. Robert LePage
Assistant Secretary for Career Education, Executive Office of Education

Mr. John Warren
General Manager of the Sports Licensed Division, Reebok International, LTD

Senate minority leader appointment:

Dr. Yvonne Spicer
Vice President for Advocacy & Educational Partnerships, National Center for Technological Literacy

House minority leader appointment:

Representative Paul Frost
Seventh Worcester District

Background

DST began during World War I when Germany moved its clocks back to reduce electricity usage and make more coal available for other uses.¹ The United States followed suit, passing the Standard Time Act of 1918, which established the four time zones still found across the continental United States.² The national observation of DST ceased after the war, but many states, counties, and even individual municipalities continued the practice, creating a confusing patchwork of DST observance across the country.³

The lack of a standardized approach to DST complicated commerce, particularly in the transportation and broadcasting industries, which prompted Congress to act.⁴ The Uniform Time Act of 1966 created a system in which every state observed DST beginning on the last Sunday in April and ending on the last Sunday in October, unless an entire state opted out of DST.⁵ The Act was later amended so that a state straddling two time zones could exempt a portion of the state from DST. The Uniform Time Act ended the country's slapdash geographical calendar of DST observances.⁶

During the oil embargo of 1973, Congress experimented with year-round DST to conserve fuel.⁷ The experiment was intended to last from January 6, 1974, to April 27, 1975, although the country returned to an abbreviated period of standard time after parents raised concerns about children walking to school in the dark.⁸ In 1975, the U.S. Department of Transportation evaluated the experiment and determined that extending the DST period from six to eight months could have modest benefits "in the areas of energy conservation, overall traffic safety, and reduced violent crime."⁹

In 1986, Congress advanced the start date of DST by three weeks to the first Sunday in April in another attempt to conserve energy.¹⁰ Then, in 2007, following the passage of the Energy Policy Act of 2005, the start date of DST moved forward an additional three weeks to the second Sunday in March, and the end date moved back one week to the first Sunday in November.¹¹

¹ Matthew J. Kochten & Laura E. Grant, *Does Daylight Saving Time Save Energy? Evidence from a Natural Experiment in Indiana*, 93 Review of Econ. and Stat. 1172, 1172 (2011).

² Daniel S. Hamermesh et. al, *Cues for Timing and Coordination: Latitude, Letterman, and Longitude*, 26 J. Lab. Econ. 223, 227 (2008).

³ Jody Brumage, *The Uniform Time Act of 1966*, Robert C. Byrd Center for Congr. History and Educ. (Mar. 15, 2009), www.byrdcenter.org/byrd-center-blog/the-uniform-time-act-of-1966.

⁴ *Id.*

⁵ Beth Cook, Cong. Research Serv., R44411, *Daylight Saving Time* (2016).

⁶ *Id.*

⁷ *Id.*

⁸ *Id.*

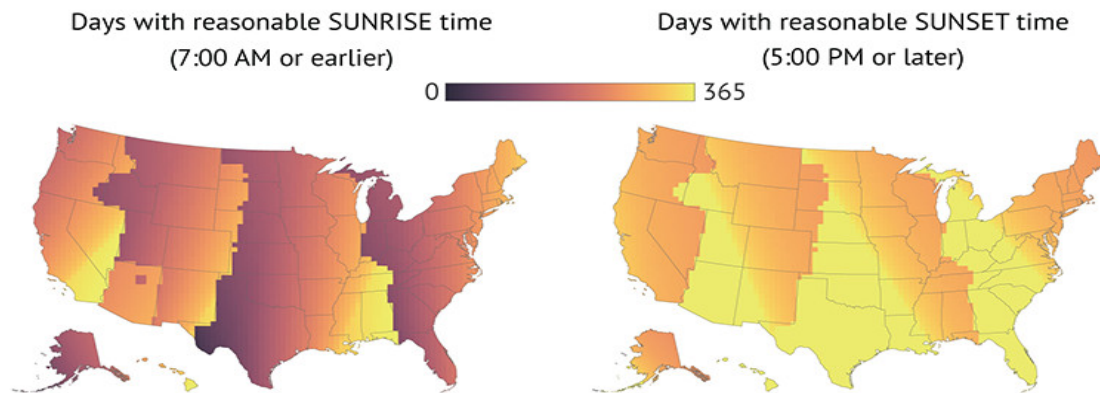
⁹ Office of the Assistant Sec'y for Policy, Plans, and Int'l Affairs, U.S. Dep't of Transp., *Exec. Summary of the Final Report on the Operation and Effects of Daylight Saving Time* (1975).

¹⁰ Kochten, *supra* note 1.

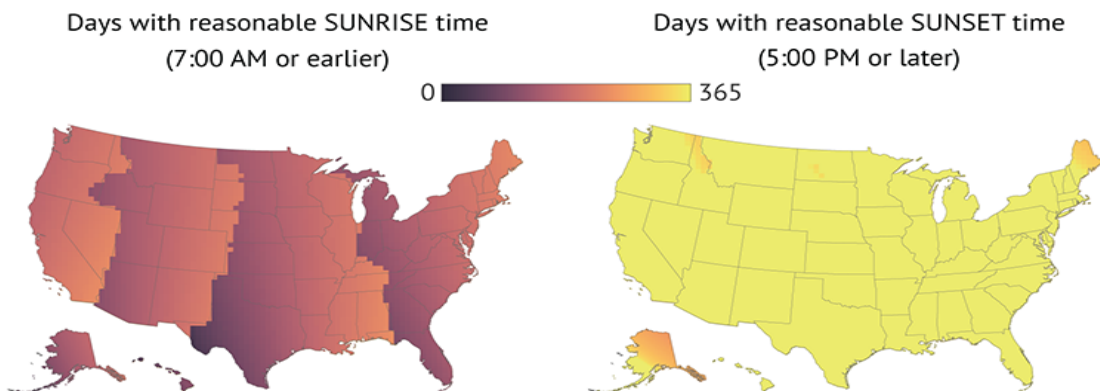
¹¹ *Id.*

Most U.S. states and territories observe DST, with the exceptions of American Samoa, Arizona (except the Navajo Nation, which does observe DST), Guam, Hawaii, the Northern Mariana Islands, Puerto Rico, and the Virgin Islands.¹² Thus, after several decades and two separate extensions, the United States ended up with eight months of DST, the system that remains in place today.¹³

Daylight Saving Time as currently observed



If Daylight Saving Time were always in effect



¹² Cook, *supra* note 5.

¹³ Brian Resnick, *The awfulness of daylight saving time, mapped*, Vox (Mar. 12, 2016, 9:15 am), www.vox.com/science-and-health/2015/11/19/9762276/daylight-saving-time-bad-mapped.

Although DST is observed in 48 states, a surprising lack of uniformity exists globally. DST is employed in only about 70 countries.¹⁴ Most of Africa and Asia do not observe DST,¹⁵ and South America is split, with many of its northern countries not observing DST, while places like Paraguay and southern Brazil follow DST.¹⁶ Even those countries that do observe DST have different start and end dates. For example, Canada follows the United States, Europe observes DST but switches its clocks a few weeks after the United States, and the parts of Australia that observe DST do so from October through April.¹⁷

No mechanism exists through which Massachusetts could adopt year-round DST, as federal law only allows states to opt out of DST,¹⁸ but the Commonwealth could effectively achieve that goal by moving from the Eastern Time Zone to the Atlantic Time Zone and then opting out of DST.¹⁹ A geographic area can change its time zone through an act of Congress, or through regulations issued by the U.S. Secretary of Transportation.²⁰ Under the regulatory route—the only approach used in recent decades—a state government petitions for a change in time zone, and the Secretary of Transportation evaluates the petition based on the change’s impact on commerce.²¹

Several other states are considering bills that would move them to year-round DST, including four of the other five New England states.²² A bill that would have made such a change in Maine—but only if Massachusetts and New Hampshire also participated—passed both legislative chambers but was ultimately laid aside.²³ A similar bill passed New Hampshire’s House but was rejected by its Senate.²⁴ Bills establishing year-round DST were also filed in the Connecticut and Rhode Island legislatures, and in the legislatures of Illinois, Michigan, Mississippi, New Mexico, and Wyoming.²⁵

¹⁴ Meeting of the Special Comm’n on the Commonwealth’s Time Zone [hereinafter Comm’n], statement of Dr. David Prerau (Apr. 12, 2017).

¹⁵ *Worldwide Daylight Saving Time*, Web Exhibits: Daylight Saving Time (2008), www.webexhibits.org/daylightsaving/g.html (accessed 9/12/17).

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Cook, *supra* note 5.

¹⁹ Matt O’Brien, *Could New England Secede from Eastern Standard Time?*, Bos. Globe (Mar. 11, 2016), www.bostonglobe.com/metro/2016/03/11/will-new-england-secede-from-eastern-standard-time/4T9tNuLYXX3rz3SKWMpkZI/story.html.

²⁰ U.S. Dep’t of Transp., Procedure for Moving an Area from One Time Zone to Another (2013).

²¹ *Id.*

²² See Time Zone Report: Following Daylight Saving Time legislation in the U.S., timezonereport.com/ [hereinafter Time Zone Report].

²³ Joe Lawlor, *Maine legislators set aside bill to end twice-a-year clock changes*, Press Herald (Jun. 12, 2017), www.pressherald.com/2017/06/12/atlantic-standard-time-zone-bill-all-but-dead-in-legislature/.

²⁴ David Brooks, *Senate votes down push to switch N.H.’s time zone*, Concord Monitor (May 11, 2017), www.concordmonitor.com/time-zone-change-atlantic-9808198.

²⁵ Time Zone Report *supra* note 22.

If Massachusetts does move to the Atlantic Time Zone and opts out of DST, then the Commonwealth would be an hour ahead of the rest of the East Coast for roughly four months each year.²⁶

The following table breaks down the periods of the year when Massachusetts would be in or out of sync with the rest of the Eastern Time Zone:

	Massachusetts	Rest of Eastern Time Zone	Difference
Second Sunday in March until first Sunday in November (34 weeks, roughly 2/3 of the year)	Coordinated Universal Time minus four hours	Coordinated Universal Time minus four hours	No difference
First Sunday in November until second Sunday in March (18 weeks, roughly 1/3 of the year)	Coordinated Universal Time minus four hours	Coordinated Universal Time minus five hours	Massachusetts one hour ahead

²⁶ *Supra* note 14, statement of Dr. David Prerau (Apr. 12, 2017).

Findings

Twice a year, as Massachusetts residents are reminded to set their clocks forward or back an hour, media outlets inundate the public with anecdotes and opinions that usually bemoan (and occasionally celebrate) this ritual switching. Until the formation of this Commission, however, the Commonwealth had not requested any group to analyze the wisdom of maintaining the status quo and switching back-and-forth between EDT and EST.

This Commission researched and evaluated the impact of time zones and DST in terms of energy, crime, and public health to help to determine the advisability of Massachusetts moving to the Atlantic Time Zone (effectively observing year-round DST). The Commission utilized a data-driven approach in determining its findings and recommendations, and relied on experts, academic papers, and data to evaluate the merits of questions about time zones. The Commission reached the following findings:

Economic Development: Commerce and Trade

The United States has a history of adjusting the clocks or the calendar to increase retail sales.²⁷ For example, Thanksgiving has been moved to an earlier date to lengthen the shopping season leading up to Christmas,²⁸ and the 2007 extension of DST was at least partially motivated by a desire to increase evening retail sales.²⁹ Year-round DST represents another opportunity to fuel consumer spending.

Jon Hurst, president of the Retailers Association of Massachusetts, surveyed his organization's members about DST in March 2017 and shared the results with the Commission. A majority of the responding retailers did not believe that Massachusetts should continue the status quo and switch between standard time and DST, and while no clear consensus existed about the choice that Massachusetts should make, a plurality of respondents indicated that Massachusetts should adopt year-round DST.³⁰ Mr. Hurst emphasized that New England adopting year-round DST as a region would be preferable to Massachusetts acting alone.³¹

Many of the retailers surveyed by Retailers Association of Massachusetts cited the positive impact of additional evening daylight on consumer spending as the reason for supporting year-round DST.³² A 2016 study conducted by JPMorgan Chase & Co. compared consumer spending in Los Angeles, where DST is observed, and Phoenix, where it is not, during the 30 days before

²⁷ Comm'n *supra* note 14, statement of Mr. Jon Hurst (Mar. 15, 2017).

²⁸ Lily Rothman, *FDR Moved Thanksgiving to Give People More Time to Shop*, TIME (Nov. 28, 2014), time.com/3603622/fdr-moved-thanksgiving/.

²⁹ Lucas Powers, *Daylight Saving Time 2016: How Big Business Benefits from More Sunshine*, CBC News (Mar. 12, 2016), www.cbc.ca/news/business/daylight-saving-business-energy-1.3485281.

³⁰ Comm'n *supra* note 14, statement of Mr. Jon Hurst (Mar. 15, 2017).

³¹ *Id.*

³² *Id.*

and after DST started and ended.³³ The study found that relative to consumer spending in Phoenix, consumer spending in Los Angeles increased by 0.9 percent at the start of DST and decreased by 3.5 percent at the end of DST.³⁴

Several Commissioners raised the question of whether being temporally out of sync with East Coast markets like New York City would increase the costs of doing interstate business, particularly in financial services. Data show that some people in jurisdictions that do not observe DST end up changing their work schedules to stay in sync with business partners in nearby states, which suggests that interstate synchronization of schedules has economic value.³⁵

Another Commissioner raised the prospect of year-round DST giving the Commonwealth's businesses a competitive advantage in terms of employee recruitment and retention. In large sectors like financial services and technology, Massachusetts businesses compete for talent with New York City and Silicon Valley, where the earliest sunsets of the year occur at 4:28 p.m. and 4:50 p.m., respectively.³⁶ In Boston, the earliest sunset of the year currently occurs at 4:11 p.m.³⁷ Year-round DST would push back the earliest sunset to 5:11 p.m., giving Massachusetts a small, but potentially meaningful, competitive advantage.³⁸

A 2003 report on Massachusetts' retention of college graduates—commissioned by The Boston Foundation and the Greater Boston Chamber of Commerce—identified Greater Boston's climate as one of students' main frustrations with the region.³⁹ The report also found that students seeking relief from Greater Boston's long, dark winters often relocated to the San Francisco metropolitan area after college.⁴⁰ Massachusetts cannot rectify this problem by changing its weather or the length of its seasons, but might make its winters more palatable to college graduates by making evenings less dark.

Although some questions about coordination with East Coast markets remain unanswered, the Commission found that year-round DST would positively impact consumer spending, which in turn could help the Commonwealth attract and retain more talented workers.

³³ See Diana Farrell et. al, *Shedding Light on Daylight Saving Time*, JPMorgan Chase Inst. (Nov. 2016), www.jpmorganchase.com/corporate/institute/document/jpmc-institute-daylight-savings-report.pdf.

³⁴ *Id.* at 2.

³⁵ Hammermesh *supra* note 2, at 244-245.

³⁶ Tom Emswiler, *Why Mass. should defect from its time zone*, Bos. Globe (Oct. 4, 2014), www.bostonglobe.com/ideas/2014/10/04/why-massachusetts-should-defect-from-its-time-zone/zusFxWGPQmwv6bfUb1ssxH/story.html.

³⁷ *Id.*

³⁸ *Id.*

³⁹ The Bos. Consulting Grp., *Preventing a Brain Drain: Talent Retention in Greater Boston* 18 (2003), www.tbfg.org/~media/TBFOrg/Files/Reports/Preventing%20Brain%20Drain%20report.pdf.

⁴⁰ *Id.* at 10

Labor and Workforce

The spring transition to DST causes people to lose sleep, not only on Sunday—the day following the transition—but also during that work week. Using sleep data from the Bureau of Labor Statistics, University of Washington professor Christopher M. Barnes and University of Oregon professor David T. Wagner—who have done extensive research on sleep and fatigue issues in the workplace—found that workers lost an average of 40 minutes of sleep on the Monday following the spring transition.⁴¹ That lost sleep can profoundly affect both productivity and safety.⁴²

Professors Barnes and Wagner investigated the impact of lost sleep on workplace safety by analyzing 23 years of data from the Mine Safety and Health Administration.⁴³ Mines are useful workplaces to examine when considering the effect of transitioning to DST because mining work occurs largely underground; therefore, differences in sunlight do not skew the data.⁴⁴ The analysis showed a 5.7 percent increase in the number of injuries on days following the spring transition to DST and a 67.6 percent increase in the number of days lost due to injury, suggesting an increase in the severity of the injuries.⁴⁵

In addition to compromising workers' safety, the spring transition to DST compromises their productivity. Professors Barnes and Wagner collected Google search data from the Monday following the spring transition to DST and measured an increase in traffic to entertainment-related websites of between 3.1 and 6.4 percent, which suggested that workers were too tired to focus on their jobs.⁴⁶ A lab experiment also revealed that an hour of disturbed sleep led study participants to “cyberloaf” for, on average, 20 percent of the duration of an assigned task.⁴⁷

The Commission finds that eliminating the spring transition to DST would increase productivity and cut down on both the number and severity of on-the-job injuries, which would lead to lower costs for businesses (e.g. more productivity, lower rates for workers' compensation insurance, and less need for hiring and training replacement workers).

⁴¹ See Christopher M. Barnes and David T. Wagner, *Changing to Daylight Saving Time Cuts Into Sleep and Increases Workplace Injury*, 94 J. Applied Psychol. 1305 (2009).

⁴² *Id.*

⁴³ *Id.* at 1310.

⁴⁴ Comm'n *supra* note 14, statement of Mr. Christopher M. Barnes (Apr. 12, 2017).

⁴⁵ *Supra* note 41, at 1305, 1310-1311 (2009).

⁴⁶ Christopher M. Barnes et. al, *Lost Sleep and Cyberloafing: Evidence from the Laboratory and a Daylight Saving Time Quasi-Experiment*, 97 J. Applied Psychol. 1068, 1071 (2012).

⁴⁷ *Id.* at 1073.

Public Health

DST, as currently observed, has several impacts on public health. The spring transition itself has negative consequences, most of which result from lost sleep, while the additional evening daylight provided during DST improves public health by increasing physical activity among residents.⁴⁸ As previously stated, people lose a significant amount of sleep in the days following the spring transition to DST, which leads to an increase in traffic fatalities and an increase in both the frequency and severity of on-the-job injuries.

In addition to those risks, the spring transition to DST has another potentially fatal consequence: a higher incidence of acute myocardial infarction—also known as heart attack.⁴⁹ A study published in the *New England Journal of Medicine* in 2008 found that the incidence of heart attack significantly increased during the three weekdays following the spring transition, but significantly decreased for only one weekday following the fall transition.⁵⁰ The authors stated that “the adverse effect of sleep deprivation on cardiovascular health” was the “most plausible explanation” for their findings.⁵¹

The public health benefits of year-round DST do not just stem from the elimination of the spring transition. A study that followed more than 23,000 children before and after the clocks changed found that more evening daylight correlated with a small, but meaningful, increase in their physical activity levels.⁵² The impact occurred population wide, which is important, according to the authors, “because even small changes to the population mean can have important public health consequences.”⁵³ The authors also noted that the effect size of additional evening daylight compared favorably to the effect size of “intensive, individual-level interventions,” suggesting that daylight saving is a highly efficient means of promoting exercise.⁵⁴

The Commission finds that adopting year-round DST would improve public health in the Commonwealth by eliminating the annual spring transition to DST—with its corresponding increase in traffic fatalities, workplace injuries, and heart attacks—and also by providing residents with additional evening daylight during the winter, which would lead to increased physical activity among residents.

⁴⁸ Heindrik Wolff & Momoe Makino, Does Daylight Saving Time Burn Fat? Time Allocation with Continuous Activities 3 (2014), econ.washington.edu/sites/econ/files/old-site-uploads/2014/06/Economica-R-and-R-2014-Wolff-Makino.pdf.

⁴⁹ Barbara S. Taylor, M.D. & Scott M. Hammer, M.D., *Shifts to and from Daylight Saving Time and Incidence of Myocardial Infarction*, 359 New Eng. J. Med. 1966, 1966 (2008).

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² Anne Goodman et. al, *Daylight saving time as a potential public health intervention: an observational study of evening daylight and objectively-measured physical activity among 23,000 children from 9 countries*, 11 Int’l J. Behav. Nutrition and Physical Activity 1, 7 (2014).

⁵³ *Id.*

⁵⁴ *Id.* at 1.

Energy

Most of the academic literature on DST and energy focuses on energy usage during the March-to-November DST period. While interesting, that information is not particularly relevant to the Commission, which is charged with investigating how DST would affect energy usage from early November to mid-March rather than how DST affects energy usage during the summer. There is, however, some information that sheds light on the impact that winter DST would have on energy consumption.

According to a presentation made by Commission member Peter Shattuck, a study conducted by the U.S. Department of Energy (DoE) following the 2007 extension of DST provides the energy usage data most relevant to the Commission.⁵⁵ This 2007 extension added three weeks of DST in the spring and one week in the fall, creating a natural experiment that can be exploited to measure how energy usage changes when DST encroaches deeper into winter.⁵⁶

The DoE study compared electricity consumption during those four weeks in 2006 and 2007. DoE found a 0.48 percent drop in electricity consumption nationally following the extension of DST and a 0.68 percent drop in New England.⁵⁷ In Massachusetts, electricity consumption increased by 1.2 percent in the morning during the spring, but decreased by 3.2 percent in the afternoon and evening.⁵⁸ During the fall, electricity consumption increased by one percent in the morning, but decreased by 2.8 percent in the afternoon and evening.⁵⁹

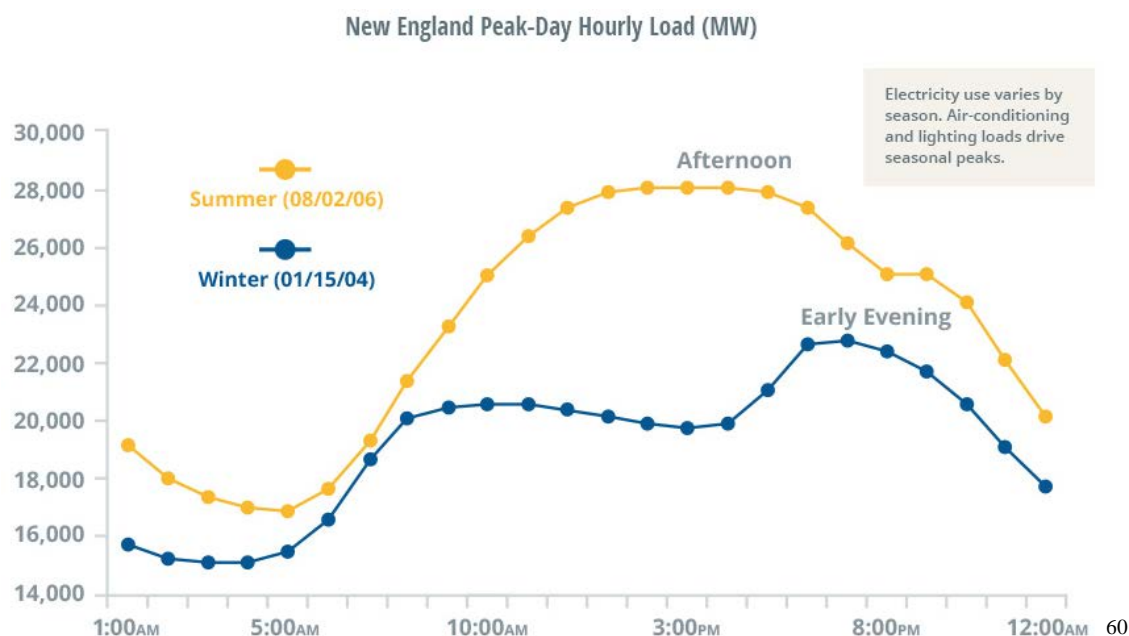
⁵⁵ See U.S. Dep't of Energy, Report to Cong.: Impact of Extended Daylight Saving Time on National Energy Consumption (2008).

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.*



Mr. Shattuck helped put those numbers in context for the Commission, explaining that in New England, peak demand for electricity occurs in the early evening during the winter. He added that peak winter demand poses a problem because the region has developed a heavy reliance on natural gas for electricity generation, and in the winter natural gas is used for heating.⁶¹ Residents have felt the impact of that heavy reliance in recent winters when natural gas was scarce and its price spiked, causing electricity bills to rise sharply.⁶²

Because afternoon and evening are the hours of peak winter electricity demand, Mr. Shattuck explained, even a small reduction in afternoon and evening electricity consumption can have significant benefits.⁶³ If the Commonwealth were having difficulty meeting demand for even a few hours each winter, then Massachusetts might be compelled to invest in costly new energy infrastructure.⁶⁴ Even one-half a percentage point reduction in peak demand could obviate the need for that new infrastructure, which would result in lower greenhouse gas emissions and lower costs for ratepayers.⁶⁵

The Commission finds that year-round DST has the potential to produce modest energy savings. The Commission also finds that due to the timing of those savings and New England's current energy portfolio, year-round DST could lead to meaningful reductions in both future energy costs and greenhouse gas emissions.

⁶⁰ ISO New Eng., 2015 Regional System Plan (2015).

⁶¹ *Id.*

⁶² Megan Woolhouse, *National Grid's Electric Rates Going up for Winter*, Bos. Globe (Sept. 15, 2015), www.bostonglobe.com/business/2015/09/15/national-grid-electric-rates-going-for-winter-but-not-much-last-year/s3nFnwz4on3IrXD8L4MRoO/story.html.

⁶³ Comm'n, *supra* note 22, statement of Mr. Peter Shattuck (Mar. 15, 2017).

⁶⁴ *Id.*

⁶⁵ *Id.*

Crime and Criminal Justice

Proponents of DST have long speculated that its observance reduces crime, which academic researchers have recently confirmed. University of Virginia professor Jennifer Doleac and Cornell University professor Nicholas Sanders, both of whom offered expert testimony to the Commission, used transitions to and from DST as a natural experiment to measure the impact that shifting daylight from the morning to the evening has on crime. They published their results in 2015.⁶⁶

The study found a seven percent decrease in robberies due to an additional hour of evening daylight, including a 27 percent reduction during evening commuting hours, with no corresponding increase in crime during morning commuting.⁶⁷ The study also found suggestive but not conclusive evidence of a decrease in the incidence of rape.⁶⁸ Commuting hours offer the most potential victims to would-be robbers, which might be why preventing those hours from occurring in darkness leads to such a significant reduction in crime.⁶⁹

Professors Doleac and Sanders estimated that the three-week extension of DST in the spring of 2007 generated \$59.2 million in national social cost savings due to a reduction in robberies.⁷⁰ If that reduction were consistent throughout the year, then year-round DST would generate \$1 billion in national social cost savings compared to year-round standard time.

The transition to DST also has several impacts on the criminal justice system. Researchers have demonstrated that people of color are more likely to be searched arbitrarily and arrested in the days following the transition.⁷¹ In addition, judges hand out longer sentences in the wake of the annual transition to DST.⁷² Unlike the effect of evening daylight on crime, which last through the duration of DST, these effects are limited to the days following the spring transition to DST.⁷³

Based on the strength of the academic research, the Commission finds that year-round DST could reduce street crime and produce significant social savings, and could also reduce criminal-justice inequities.

⁶⁶ See Jennifer L. Doleac and Nicholas J. Sanders, *Under the Cover of Darkness: How Ambient Light Influences Criminal Activity*, 97 The Review of Econ. and Stat. 1093 (2015).

⁶⁷ *Id.* at 1094.

⁶⁸ *Id.* at 1100.

⁶⁹ *Id.* at 1101.

⁷⁰ *Id.* at 1102.

⁷¹ Comm'n *supra* note 14, statement of Mr. David Wagner (Apr. 12, 2017).

⁷² Kyongmin Cho et. al, *Sleepy Punishers are Harsh Punishers: Daylight Saving Time and Legal Sentences*, 28 Psychol. Sci. 242, 245 (2016).

⁷³ *Id.*

Transportation

Moving Massachusetts' time zone out of sync with other eastern states from November to mid-March has the potential to cause confusion at the Commonwealth's airports. José C. Massó, director of policy at Massport, told the Commission that although airports use universal time to communicate with each other, they use local time to communicate with the public.⁷⁴ He warned that an hour time difference would likely confuse passengers traveling to or from destinations served by Logan International Airport including New York City, Washington, D.C., and Atlanta.⁷⁵

Mr. Massó informed the Commission that during the three weeks of the year when the United States observes DST but Europe does not, manageable logistical challenges for both passengers and airports result.⁷⁶ Ed Freni, Massport's director of aviation, testified that extra resources are needed to plan for the complexity of those three weeks, and additional staff is needed to assist passengers.⁷⁷ Year-round DST could cause airports located in the Commonwealth to incur those additional costs over a longer period and for more flights.⁷⁸

Regional action would help mitigate the negative impacts to airports caused by a change to year-round DST, according to Mr. Massó.⁷⁹ He would prefer that all the New England states and possibly New York act together to minimize the costs and confusion that would ensue if Massachusetts acted alone.⁸⁰

While having a clear impact on modes of transportation like air and rail that rely on carefully calibrated schedules, DST also impacts vehicular traffic. A study conducted by Austin C. Smith, an economist at the University of Colorado, found a 5.4 to 7.6 percent increase in fatal crashes during the six-day period following the beginning of DST.⁸¹ Mr. Smith estimated that over a decade, the spring transition caused 302 deaths and resulted in a social cost of \$2.75 billion.⁸²

Mr. Smith found that the fall transition to standard time had no aggregate impact on traffic fatalities.⁸³ The reallocation of light from the evening to the morning did lead to a corresponding reallocation of fatal crashes from the morning to the evening, but those changes balanced each other out.⁸⁴ Other researchers have reached different conclusions. Paul Fischbeck and David Gerard of Carnegie Mellon University found that brighter mornings and darker evenings led to a

⁷⁴ Comm'n *supra* note 14, statement of Mr. José C. Massó (Mar. 15, 2017).

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ Comm'n *supra* note 14, statement of Mr. Ed Freni (Mar. 15, 2017).

⁷⁸ Comm'n *supra* note 14, statement of Mr. José C. Massó (Mar. 15, 2017).

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ Austin C. Smith, *Spring Forward at Your Own Risk: Daylight Saving Time and Fatal Vehicle Crashes*, 8 Am. Econ. J.: Applied Econ. 65, 79 (2016).

⁸² *Id.* at 89

⁸³ *Id.* at 68

⁸⁴ *Id.* at 80

net increase in pedestrian fatalities, with more lives lost in the evening than saved in the morning.⁸⁵ Their findings suggest that observing DST throughout the winter would save lives.⁸⁶

The Commission finds that year-round DST would have a mixed impact on transportation. While evidence suggests that year-round DST would lead to fewer traffic fatalities, unilateral action by Massachusetts would likely complicate travel air and train travel.

Broadcasting

Adopting year-round DST could prove problematic for Massachusetts broadcasters.⁸⁷ If Massachusetts adopted year-round DST on its own, national evening news programs would broadcast an hour later from early November to mid-March, as would the 8 p.m. to 11 p.m. slot for national programming.⁸⁸ Those changes could disrupt local news programs, which are the biggest sources of revenue for local broadcasters, according to Jim Smith, general counsel to the Massachusetts Broadcasters Association.⁸⁹ The fact that Central time zone audiences often have television shows broadcast an hour earlier, however, suggests that the logistical issues arising from the four-month shift may have manageable solutions.

Live television events would pose additional challenges to broadcasters.⁹⁰ As currently programmed, an event like the Oscars that ended after midnight this year would instead end after 1 a.m., which would likely diminish viewership.⁹¹ Primetime sports events like Sunday, Monday, and Thursday night football would begin broadcasting after 9 p.m. and conclude well after midnight. Broadcasters and producers might have to take into account the relative size and market power of Massachusetts when deciding when to air certain programs between November and March. Leagues and major events would not alter their schedules to accommodate Massachusetts alone, according to Mr. Smith, because the need to capture the West Coast market is greater than the need to capture the Massachusetts market.⁹²

Mr. Smith additionally informed the Commission that even if all six New England states observed year-round DST they would still be outliers, adding that there would likely be no changes in national live broadcast schedules unless New York or Pennsylvania joined New England in making the change.⁹³ He said that New England acting alone presents issues to

⁸⁵ David Gerard, *The Spring Time Change Saves Lives*. N.Y. Times: Room for Debate (Mar. 6, 2014), www.nytimes.com/roomfordebate/2014/03/06/daylight-saving-time-at-what-cost/the-spring-time-change-saves-lives?mcubz=0.

⁸⁶ *Id.*

⁸⁷ Comm'n *supra* note 14, statement of Mr. Jim Smith (Apr. 12, 2017)

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

broadcasters, which is why the Massachusetts Broadcasters Association opposes a change to year-round DST.⁹⁴

Moving national television programming and live events to a later hour could also impact the sleep habits of some Massachusetts residents. The Commission discussed how the national programming slot, which ends at 11 p.m. in the Eastern and Pacific Time Zones and at 10 p.m. in the Central and Mountain Time Zones, has been exploited by researchers looking to measure the effect of television schedules on people's behavior. Researchers have found that the one-hour difference in schedules had a meaningful effect on when people went to bed in the evening and when they woke up and went to work in the morning.

People in the early zones (Central and Mountain) are 6.4 percentage points less likely to watch television between 11 p.m. and 11:15 p.m. than those in the later zones (Eastern and Pacific).⁹⁵ Those nighttime television habits lead to corresponding changes in morning habits. People in the early zones (who stopped watching television at an earlier hour) are 3.4 percentage points less likely to be asleep at 7 a.m. and 3.4 percentage points more likely to be at work at 8 a.m. than people in the later zones.⁹⁶ Based on that information, a Massachusetts move to year-round DST may alter the sleep schedules of residents.

The Commission finds that year-round DST could have some negative effect on broadcasters, unless other states adopted year-round DST. Additionally, the Commission finds that some residents would change their sleep habits due to later television schedules by either sleeping less or waking up later.

Education and School Start-Times

Year-round DST would shift one hour of daylight from the morning to evening from early November to mid-March, leading to darker mornings as children head to school, but lighter afternoons as children engage in end-of-school and after-school activities. Parents have long worried that darker mornings make traveling to school more dangerous, and both the available data and other factors such as puberty, sleep, and alertness suggest they might be correct.⁹⁷

Although the Commission has not learned of recent studies on the effects of daylight on the safety of schoolchildren's commute, in a 1976 report to Congress on the impacts of the nation's year-round DST experiment, the National Bureau of Standards ("NBS") found evidence of increased fatalities among school-aged children from January to April of 1974, when DST was in effect, compared with the same period (non-DST) in 1973.⁹⁸ However, NBS could not determine what part of the increase, if any, was due to DST rather than other factors. Further,

⁹⁴ *Id.*

⁹⁵ Hammermesh, *supra* note 2, at 233.

⁹⁶ *Id.*

⁹⁷ Cook, *supra* note 5; *see also* Judith A. Owens, MD, *School Start Times for Adolescents*, 134 *Pediatrics* 642, 642 (2014).

⁹⁸ Cook, *supra* note 5.

when these same data were analyzed on a month-by-month basis for March and April, no significant difference was found for fatalities among school-age children in the morning.⁹⁹

According to Commission member Dr. Judith Owens, dark winter mornings also might make high school students more prone to exacerbated seasonal affective disorder and increased car accidents.¹⁰⁰

One way to avoid the downsides of year-round DST for school-aged children would be to delay school start-times until after there is sufficient daylight for safe travel.¹⁰¹ Civil twilight, which occurs roughly half an hour before sunrise, is the moment when there is generally enough natural light to engage in outdoor activities, such as walking or driving to school.¹⁰²

The following table shows the range of civil twilight times in Massachusetts from November 2017 to March 2018 under both standard time and DST:

	Nov	Dec	Jan	Feb
Civil Twilight EST	5:53-6:21am	6:22-6:41am	6:29-6:42am	5:54-6:28am
Civil Twilight DST	6:53-7:21am	7:22-7:41am	7:29-7:42am	6:54-7:28am
Sunrise EST	6:23-6:52am	6:53-7:13am	6:59-7:13am	6:22-6:58am
Sunrise DST	7:23-7:52am	7:53-8:13am	7:59-8:13am	7:22-7:58am
<ul style="list-style-type: none"> • If school starts at 7-7:30am, en route will be in complete darkness (before civil twilight) for almost all of 4 months and before sunrise for all 4 months • If school starts at 7:30-8am, en route will be before civil twilight for 3 months and before sunrise for most of 4 months • If school starts at 8-8:30am, en route will be before civil twilight for 2 months and before sunrise for 2 months • If school starts at 8:30am or later, en route will be after civil twilight for all 4 months and after sunrise for most of 4 months <p>*assuming average commute time of 30 minutes</p>				

103

⁹⁹ *Id.*

¹⁰⁰ Comm'n, *supra* note 14, statement and presentation of Dr. Judith Owens (May 31, 2017).

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*

During the 2014-2015 academic year, the average start time for a Massachusetts middle or high school was 7:37 a.m., meaning that the average middle or high school would open in the dark for much of December and January under year-round DST.¹⁰⁴ However, most schools are not in session for a week or more during the darkest period in late December and early January. Pushing back start-times to 8 a.m. would mean that schools never open in the dark, even under year-round DST, while pushing start-times to 8:30 a.m. would mean that few students would even have to commute to school in the dark under year-round DST.

Delaying school start-times for middle and high school students would also be consistent with the health recommendations of the American Academy of Pediatrics¹⁰⁵ and the Massachusetts Medical Society.¹⁰⁶ Adolescents naturally fall asleep and wake up later, so delayed school start-times enable them to obtain an adequate amount of sleep.¹⁰⁷ For teenagers, receiving adequate sleep lowers stress and risk of obesity; improves executive functioning and mood; and reduces risk-taking behavior.¹⁰⁸ Adolescents who sleep for eight or more hours nightly are also less likely to be involved in physical altercations, smoke, drink alcohol, be sexually active, feel sad, and consider suicide.¹⁰⁹

In addition, later middle and high school start-times have led to higher attendance rates, lower tardiness and dropout rates, and improved grades and test scores in schools in Massachusetts and around the country.¹¹⁰ When Nauset Regional High School pushed first period back from 7:25 to 8:35 a.m. in 2012, the tardiness rate dropped by 35 percent, and the number of “D”s and “F”s fell by half.¹¹¹ After delaying its start from 7:25 to 7:55 a.m. in 2016, Hanover High School saw a 32 percent drop in “D”s and “F”s and a 10 percent jump in “A”s in first-period classes.¹¹²

According to a macroeconomic state-by-state analysis conducted by the RAND Corporation, a delay in school start-times to 8:30 a.m. nationwide correlates with an annual increase in the national economy of approximately \$9.3 billion, an increase in high school graduation rates of 13.3 percent, and an increase in college attendance of 9.6 percent.¹¹³ The stronger academic and professional performance for students reflected in these numbers, along with as a reduction in car crash rates among adolescent drivers, could lead to an estimated additional \$83 billion

¹⁰⁴ *Id.*

¹⁰⁵ Owens, *supra* note 91.

¹⁰⁶ See *Massachusetts Medical Society Physicians Adopt New Resolutions at Interim Meeting*, Mass. Med. Soc’y (Dec. 5, 2015), <http://www.massmed.org/News-and-Publications/MMS-News-Releases/Massachusetts-Medical-Society-Physicians-Adopt-New-Resolutions-at-Interim-Meeting/#.WbLms2eWyUm>.

¹⁰⁷ Owens, *supra* note 91, at 644.

¹⁰⁸ See Stacy Simera, MSSA & Mary Haymaker, JD, *Massachusetts School Start Time Legislation Parameters and FAQs*, Start Sch. Later, Mass. Chapter (2017).

¹⁰⁹ *Id.*

¹¹⁰ Owens, *supra* note 91, at 644.

¹¹¹ James Vaznis, *Students Find More Awareness with Later Starts*, Bos. Globe (Mar. 10, 2016), www.bostonglobe.com/metro/2016/03/09/students-see-benefits-from-later-school-start-times/OOb4vtHm4XZTBLm5X78V9L/story.html?event=event12.

¹¹² Comm’n, *supra* note 22, from presentation by Dr. Judith Owens (May 31, 2017).

¹¹³ See Hafner et. al, *Later School Start Times in the U.S.: An Economic Analysis*, The RAND Corp. (2017), www.rand.org/pubs/research_reports/RR2109.html.

contribution to the U.S. economy within the next decade.¹¹⁴ Effects from delayed school start-times could be felt within a year of making this shift.¹¹⁵ This report estimates that this kind of change could have a cost-benefit ratio *specifically in Massachusetts* such that the Commonwealth would, at minimum, break even after just two years, and would achieve a cost-benefit ratio of 4.5 after 10 years; meaning that for every dollar spent to make the start-time change, the *return would be more than four-fold the cost*, due to improved academic achievement and reduction in car crash rates.

The Commission finds that with current school schedules remaining in place, adopting year-round DST can pose a public safety risk to school-aged children in the winter months. Those risks could be mitigated by delaying school start-times, however, which would also bring additional benefits, including healthier adolescents and better academic performance by middle and high school students.

¹¹⁴ *Id.*

¹¹⁵ *Id.*

Recommendations

Based on its research and findings, and after weighing the costs and benefits associated with the observance of time in Massachusetts, the Commission believes that under certain circumstances the Commonwealth could make a data-driven case for moving to the Atlantic Time Zone year-round (effectively observing year-round DST). Although appreciable costs associated with making this change would result, on balance the Commission finds that doing so could have positive benefits that largely stem from the absence of a spring transition to DST and the additional hour of winter evening light.

Providing an additional hour of winter evening light could bring societal benefits to Massachusetts largely by boosting consumer spending and economic development opportunities, reducing certain types of crime, increasing the population's physical activity level, and cutting greenhouse gas emissions and associated energy costs for residences in Massachusetts from early November to mid-March, when Massachusetts currently observes standard time.

The adoption of year-round DST also would eliminate the spring transition to DST and the week of population-wide sleep loss that results. Preventing that sleep loss could have broad and powerful impacts on public health in the Commonwealth. During the week in question, Massachusetts residents could experience fewer traffic fatalities, workplace injuries, and heart attacks, with many lives and tens of millions of dollars saved as a result.

However, the Commission does not recommend a simple switch to the Atlantic Time Zone, and cautions that several qualifiers should accompany any future conversations or legislative proposals with respect to how Massachusetts observes time. The Commission offers the following blueprint of concerns for a thoughtful implementation of year-round DST, should Massachusetts ever decide to pursue this policy change:

Regional Action

Any move to year-round DST should be regional, because acting alone would make Massachusetts a significant outlier, and could disrupt commerce, trade, interstate transportation, and broadcasting. The Commission recommends that the Legislature adopt year-round DST only if a majority of other Northeast states – possibly including New York – do so as well. To facilitate regional action, the Legislature and Governor should raise this issue with other Northeastern legislative and executive bodies, including the National Conference of State Legislatures, the Council of State Governments, Coalition of Northeast Governors, and gatherings of New England Governors and Eastern Canadian Premiers.

As stated previously, several other Northeast states are already considering bills that would have them observe DST year round. Maine's bill passed both legislative chambers before being laid aside. New Hampshire's passed the House but was rejected in the Senate. Connecticut and Rhode Island are considering such bills but have not voted on them. Vermont is not currently

considering legislation related to year-round DST, but is weighing a resolution urging Congress to abolish DST.¹¹⁶

If a group of Northeast states does decide to pursue year-round DST, then they should also recruit New York, as benefits described in the Findings section of this report would likely be applicable to it and other states as well.

For Massachusetts to spur regional action, the Legislature could consider passing a bill that instructs the Secretary of the Commonwealth to petition the U.S. Secretary of Transportation to place Massachusetts in the Atlantic time zone and—pending the U.S. Secretary of Transportation’s approval of the petition—amend section 10 of chapter 4 of the General Laws in order to opt the Commonwealth out of observing DST. Such a bill should condition the shift taking place only after a majority of other Northeast states have passed legislation to the same end.

Later School Start-Times

Year-round DST would bring darker mornings from early November to mid-March, and without changes to school schedules, could lead to children traveling to school in darkness when the sun rises latest. Although there would be more daylight for after-school activities and travel home for these children (and there are winter school breaks during parts of this time), the early-morning transit time has the potential to pose public safety risks. Moreover, independent of public safety concerns, the Commission has found compelling data that indicate that the early-morning start-times can negatively impact some students’ academic performances, with students not fully awake when they begin classes.

The Commission therefore recommends that any move to year-round DST should be accompanied by statewide standards for delaying school start-times to mitigate safety issues; improve student academic performance, health, and well-being; and add significantly to the other economic benefits related to year-round DST — for example, 8 a.m. for elementary schools and 8:30 a.m. for middle and high schools. These standards could mitigate the negative effects of darker mornings, ensuring that children head to school in the dark for only a handful of days each winter. They could also improve both students’ performance in school, and their physical and mental health.

Public Awareness

The Commission found that the change to year-round DST could cause confusion in broadcasting, commerce, and interstate transportation. That confusion—and any ensuing economic disruption—could be minimized through effective communication with the public. For that reason, the Commission believes that the Legislature should not adopt year-round DST

¹¹⁶ Time Zone Report *supra* note 21.

unless it simultaneously commits funding to educate the public about the implications of the change.

The Legislature would need to focus its public awareness efforts on communities in close proximity to new time zone boundaries. If New York did not join New England states in adopting year-round DST, for example, then people on both sides of the border between Massachusetts and New York would need to be fully informed about the change. Public awareness would be the best way to avoid disruptions caused by confusion around the four-month time difference.

The Legislature would also need to work with Amtrak, Massport, the Massachusetts Department of Transportation, and others to ensure that people traveling to and from Massachusetts would be aware that the Commonwealth does not observe Eastern Standard Time from early November to mid-March. Public awareness campaigns would need to be repeated each November when most states transition from DST back to standard time.

Even if Massachusetts does not adopt year-round DST, public awareness about transitions to and from DST would still be beneficial. A public awareness campaign preceding the spring transition to DST would help residents prepare for the sleep loss caused by the transition so that they could try to mitigate its negative consequences.

APPENDIX A: **Individuals Invited to Testify**

Meeting 1 (January 11, 2017):

- Commissioners only

Meeting 2 (Mar. 15, 2017):

- Jennifer Doleac, University of Virginia Professor, and Nicholas Sanders, Cornell University professor, co-authors of the paper “Under the Cover of Darkness: How Ambient Light Influences Criminal Activity”
- Jon Hurst, President of the Retailers Association of Massachusetts
- Peter Shattuck, Member of the Commission, Director of Acadia Center’s Clean Energy Initiative and Director of the Massachusetts Office

Meeting 3 (Apr. 12, 2017):

- Christopher M. Barnes, University of Washington Professor, and David T. Wagner, University of Oregon Professor, co-authors of the papers “Changing to Daylight Saving Time Cuts Into Sleep and Increases Workplace Injuries” and “Lost Sleep and Cyberloafing: Evidence From the Laboratory and a Daylight Saving Time Quasi-Experiment”
- David Prerau, DST researcher, historian, and author of the book “Seize the Daylight: the Curious and Contentious Story of Daylight Saving Time”
- Jim Smith, General Counsel to the Massachusetts Broadcasters Association
- José C. Massó, Director of Policy at Massport
- Nancy Donoghue, Director of Government Affairs at Massport
- Ed Freni, Director of Aviation at Massport

Meeting 4 (May 31, 2017):

- Dr. Judith Owens, Director of the Center for Pediatric Sleep Disorders at Boston Children’s Hospital, Neurology Professor at Harvard Medical School, and member of the Commission
- Thomas Emswiler, Member of the Commission, public health advocate

Meeting 5 (September 20, 2017):

- Commissioners only

Meeting 6 (November 1, 2017):

- Commissioners only

APPENDIX B: Meeting Minutes

Special Commission on the Commonwealth's Time Zone

Wednesday, January 11, 2017 (Meeting 1)

**Massachusetts State House
Hearing Room 222
Boston, MA 02133**

Members present (appointed by):

Representative Daniel Cahill (Speaker), Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Tim Miley (Governor), Peter Shattuck (Senate President), John Warren (Governor)

Members absent:

Robert LePage (Governor)

Members yet to be appointed:

One from the Speaker of the House

One from the Senate Minority Leader

Meeting Minutes

Senator Donoghue welcomed and thanked the members of the special commission for being in attendance. She introduced the members present in the room and then spoke about the creation of this special commission through Chapter 219 of the Acts of 2016, also known as the economic development bill. She noted that the special commission is charged with conducting a comprehensive study on the commonwealth remaining on Eastern Daylight Time throughout the entire year, with attention paid to the impact that this change would have on the economy as a whole, on the education system, on public health, on the transportation system, on energy consumption, and on commerce. Senator Donoghue said that the special commission is tasked with filing a report by March 31, 2017, a deadline that it will do its best to meet. She stated her hope that the commission would take a data-driven approach.

Members of the special commission then introduced themselves and spoke briefly about their background, their goals for the special commission, and topics they would like to consider at future meetings.

John Warren said that he had worked as a CFO and COO for Reebok and Adidas and would bring his business background to bear on the special commission's work.

Peter Shattuck said he was interested on potential energy and climate change impacts and suggested that the special commission could examine data on energy usage in the weeks before and after time changes.

Thomas Emswiler noted that his op-ed published in the *Boston Globe* two years ago was the first step towards the creation of the commission. He thanked Senator Keenan for filing by request a bill to form the commission and stated his intention to remain objective throughout the process.

Representative Cahill said that he represented Lynn, a gateway city near Boston where transportation is an important issue, and that he will focus on the impact of a time zone change on transportation.

Senator Donoghue reintroduced herself, noting that she was appointed by Senate President Rosenberg, and said that as the Senate chair of the Joint Committee on Economic Development and Emerging Technologies she will be particularly interested on the economic development component of the commission's work.

Representative Finn said that he was new to the idea of changing time zones and that research about its public health effects had caught his attention. He added that the commission was a good opportunity to discuss an issue that the commonwealth might not have otherwise had the chance to address.

Representative Frost noted that the Joint Committee on State Administration and Regulatory Oversight had considered time zone changes in the past and said that although he would keep an open mind, he would also play the role of skeptic. He mentioned concerns including the safety of children going to school in the dark, practical issues related to the possibility of Massachusetts acting without other New England states, and potential problems caused by glare on the commutes into and out of Boston from Western Massachusetts.

Tim Miley said that the Department of Public Health had data that is relevant to the commission's work and that he hoped to bring those resources to bear on the study.

Senator Donoghue said that the commission members needed to elect a chair who would organize the commission and handle administrative issues. Mr. Emswiler nominated Senator Donoghue. Representative Cahill seconded the nomination. The commission members unanimously elected Senator Donoghue, who thanked her colleagues, mentioned the possibility of soliciting input from the public, and suggested that the commission would meet once a month with a full agenda before submitting its data-driven report to the legislature by the early spring.

Senator Donoghue adjourned the meeting at 11:43 a.m.

*Special Commission on the Commonwealth's Time Zone
Wednesday, March 15, 2017 (Meeting 2)*

**Massachusetts State House
Hearing Room 222
Boston, MA 02133**

Members present (appointed by):

Representative Daniel Cahill (Speaker), Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Tim Miley (Governor), Robert LePage (Governor), Dr. Judith Owens (Speaker), Peter Shattuck (Senate President), Yvonne Spicer (Senate Minority Leader), John Warren (Governor)

Meeting Minutes

Senator Donoghue welcomed the members of the special commission and thanked them for being in attendance. She introduced two members of the commission who had been appointed since the January meeting.

Senator Donoghue said that Yvonne Spicer is the vice president for advocacy and educational partnerships at the National Center for Technological Literacy, a role in which she directs the Museum of Science's efforts to improve K-12 STEM education in Massachusetts and around the world. She added that Ms. Spicer—who has had a distinguished career in STEM education, including stints with the Framingham Public Schools, the Newton Public Schools, and the Massachusetts Department of Elementary and Secondary Education, and several state and national advisory boards related to technology and education—will be a great resource and partner on the commission. Senator Donoghue also noted that Senate Minority Leader Bruce Tarr had appointed Ms. Spicer to the commission.

Senator Donoghue then introduced Dr. Judith Owens, director of the Center for Pediatric Sleep Disorders at Boston Children's Hospital and a member of the faculty of neurology at Harvard Medical School. She said that Dr. Owens is an internationally recognized authority on pediatric sleep, and has written more than 75 research and review articles on the subject and that Dr. Owens' extensive knowledge will be incredibly helpful to the commission as it considers the impact of later winter sunrises on sleep schedules and school start times. She noted that Speaker of the House Bob DeLeo had appointed Dr. Owens to the commission.

Senator Donoghue motioned that the minutes of the commission January 15 meeting be approved. Representative Finn seconded the motion, and the minutes were approved unanimously on a voice vote.

Senator Donoghue introduced University of Virginia professor Jennifer Doleac and Cornell University professor Nicholas Sanders, co-authors of the paper "Under the Cover of Darkness: How Ambient Light Influences Criminal Activity," who joined the commission via conference

call. Ms. Doleac and Mr. Sanders said that their paper examined the effect that shifting daylight from the morning to the evening had on crime. They said that the switch to and from daylight saving time (DST) was a natural experiment that enabled them to measure that effect. They said that they found a seven percent decrease in robberies due to an additional hour of evening daylight, including a 27 percent reduction during evening commuting hours, and no corresponding increase in crime during the morning commuting hours. Ms. Doleac and Mr. Sanders concluded that an additional hour of evening daylight had a big, meaningful impact on street crime, and that making DST permanent would therefore also have a meaningful effect.

Thomas Emswiler noted that the paper estimated that the three-week extension of DST in the spring of 2007 generated \$59.2 million in social cost savings due to a reduction in robberies. He said that he had done some back-of-the-envelope math and calculated that if these savings were consistent throughout the year, year-round DST would generate more than \$1.2 billion in social costs savings. Mr. Emswiler asked if that figure sounded right, and Ms. Doleac and Mr. Sanders said that it did.

Dr. Owens asked if there were any data available on how ambient light affects delinquency. Ms. Doleac and Mr. Sanders said that there was not reliable time-based data for delinquency. Dr. Owens also asked if there were any data about crime during the year-round DST experiment that took place nationally between 1974 and 1975. Ms. Doleac and Mr. Sanders said that a study had found a 10 to 13 percent reduction in street crime in Washington, D.C. during the DST experiment. They said this study was not as reliable as their own, however.

Representative Paul Frost asked how much crime occurred around the time of sunset. He also asked if delaying sunset by one hour would delay criminal activity by one hour, rather than reducing it. Ms. Doleac and Mr. Sanders said that a substantial number of robberies occur during the commuting hours around sunset, when there are more people on the street who can potentially be robbed. They added that their study found that criminal activity was reduced due to a later sunset, and not simply delayed by it.

Peter Shattuck asked for the source of the data. Ms. Doleac and Mr. Sanders said that the data came from 558 jurisdictions around the country, including many in New England.

Senator Donoghue thanked Ms. Doleac and Mr. Sanders for their testimony and introduced Jon Hurst, president of the Retailers Association of Massachusetts (RAM) so that he could discuss small retailers' thoughts about switching to year-round DST.

Mr. Hurst said that there was a history of adjusting the clocks or the calendar to promote sales, including changing the date of Thanksgiving to lengthen the shopping season leading up to Christmas. He noted that 70 percent of the economy is driven by the consumer, and that e-commerce makes it more important than ever to look at how policies affect retailers. Mr. Hurst said that nationally, 18 percent of Christmas shopping took place online last year, and that policies including the sales tax, blue laws, and even time zones can incentivize or dis-incentivize consumers to spend locally. He added that weather and sunshine impact consumer choices.

Mr. Hurst said that he surveyed the 4,000 members of his organization about DST policies and received responses from 5 percent of them. He added that the typical response rate was 2 percent, but that surveys about issues that have a significant impact on sales or expenses receive a good response. Mr. Hurst said that 34 percent of the members who responded favored Massachusetts remaining on DST year round; 24 percent favored Massachusetts remaining on standard time year round; 23 percent did not necessarily disagree with the concept of year-round DST but preferred national action on the issue; and 19 percent favored the status quo. Mr. Hurst noted that a majority of the respondents favored year-round observation of time, rather than switching between standard time and DST. He also noted that respondents had mentioned in their comments the need for consistent regional observation of time, especially since many consumers and employees cross state lines to shop or work. Mr. Hurst concluded by stating that RAM had no official position on whether or not Massachusetts should observe year-round DST.

Senator Donoghue asked how sunlight affected sales. Mr. Hurst said that most shopping takes place on weekday evenings and weekends, and that many retailers believe that extra evening daylight attracts people to go shopping and increases sales.

Representative Michael Finn asked Mr. Hurst which option the plurality of respondents had chosen. Mr. Hurst said that the plurality supported year-round DST in order to increase sales, adding that in an age where people can shop on their iPhones, anything that policymakers can do to keep business in Massachusetts is helpful.

Representative Frost asked if out-of-state consumers and employees would be confused if the change to year-round were not regional, if it did not involve New York, or if it did not involve the rest of the East Coast. Mr. Hurst reiterated that RAM had no official position, adding that personally he believed that Massachusetts should not act alone. He said it was the same case with GMO labeling bills. Mr. Hurst suggested that if the commission did recommend a switch to year-round DST, it could recommend that any related legislation not take effect until a certain number of New England states also pass it.

Representative Daniel Cahill asked if DST affected employee health and productivity and said that he would love to see data in those areas. Mr. Hurst said that it was a great question, but one to which he did not have an answer, and suggested that an organization like the Chamber of Commerce might be able to investigate it.

Mr. Shattuck said that it can be difficult to remember the meanings of the terms DST, standard time, and Atlantic Time Zone and asked how clear the meaning of year-round DST was to the members who responded to the survey. Mr. Hurst said that the survey question framed the issue in terms of sales, crime, and health and that he would be happy to share the text of the question with the commission.

Mr. Emswiler said that it would be helpful to do a deeper dive with RAM members in order to ask them about the potential for a regional switch to year-round DST. He noted that related legislation has been filed in Connecticut, Maine, New Hampshire, and Rhode Island.

Senator Donoghue thanked Mr. Hurst for his testimony and introduced commission member Mr. Shattuck so that he could discuss the potential energy impacts of year-round DST.

Mr. Shattuck said that the U.S. had extended DST by weeks in 2007, adding three weeks in the spring and one in the fall. He said that the Department of Energy (DoE) had compared electricity consumption during those four weeks in 2006 and in 2007, which offers a chance to measure the impact of extended DST. Mr. Shattuck said that the DoE analysis found a 0.48 percent drop in electricity consumption nationally and a 0.68 percent drop in New England. He said that factors like air conditioning in the South and New England's location at the eastern edge of its time zone could help account for that difference. Mr. Shattuck also noted that in Massachusetts, electricity consumption increased by 1.2 percent in the morning during the three spring weeks, but decreased by 3.2 percent in the afternoon and evening; electricity consumption increased by one percent in the morning during the fall week, but decreased by 2.8 percent in the afternoon and evening.

Mr. Shattuck said that the National Bureau of Economic Research (NBER) had studied the energy impact of DST by comparing electricity consumption across Indiana counties, some of which observed DST and some of which did not. He stressed this study focused on the impact of DST as it is currently observed and not the impact of extending DST, which is what the commission is charged with considering. Mr. Shattuck said that the NBER study found a 1 percent overall increase in electricity consumption during DST, attributable largely to air conditioning usage, and an increase of two to four percent in early fall. He said that the key takeaways were that the increase was found in the spring, summer, and fall, but not during the winter, and that Massachusetts and Indiana have different energy profiles and climates.

Mr. Shattuck proceeded to describe the context of energy in Massachusetts and New England. He said that in New England, peak demand for electricity occurs in the afternoon during the summer and in the early evening during the winter. He added that peak winter demand poses a problem because the region has developed an overreliance on natural gas for electricity generation, and in the winter natural gas is used for heating. He said that residents felt the impact of that overreliance in the winter of 2013-2014, when natural gas was scarce and its price spiked, causing electricity bills to rise sharply. Mr. Shattuck said that electricity generators that rely on natural gas have since purchased backup fuels including oil and liquid natural gas to prevent the same problem from recurring. He also pointed to a study conducted by the Attorney General's Office that suggested that Massachusetts could meet its energy needs by investing in renewables and energy efficiency, rather than by constructing new natural gas pipelines.

Mr. Shattuck then stated the he wanted to place the DoE study—and its finding that extended DST reduced electricity consumption by 0.68 percent in New England, with particularly strong effects in the afternoon and early evening—within that broader context of energy in Massachusetts and New England. He said that because afternoon and evening are the hours of peak demand, and because solar stops generating electricity during those hours, even a small reduction in afternoon and evening electricity consumption can have significant benefits in terms of reducing energy infrastructure costs and greenhouse gas emissions. Mr. Shattuck concluded by saying that extended DST could produce modest but meaningful electricity savings.

Dr. Owens asked why there was a greater change in electricity consumption in the evening during DST. Mr. Shattuck said that people's routines are more flexible in the evening, so the amount of electricity they consume in the evening can fluctuate more.

John Warren asked if the data included commercial electricity consumption. Mr. Shattuck said that the data included all electricity, including commercial consumption.

Representative Frost said that he had always heard that the energy savings from DST were negligible and asked for Mr. Shattuck's response. Mr. Shattuck said that while the savings were not massive, they were appreciable. He added that energy efficiency reduced Massachusetts' electricity consumption by three percent, enough to make the commonwealth a national efficiency leader, so even a 0.5 percent decrease due to DST would go a long way in helping Massachusetts avoid new infrastructure and environmental costs.

Robert LePage asked if variations in weather impacted the data. Mr. Shattuck said that between summer and winter that impact would be large, but that when comparing certain months from one year to the next it would not be large. Mr. LePage asked what the dollar value of a 0.5 percent reduction in energy savings would be. Mr. Shattuck said that he would have to get back to Mr. LePage with an answer.

Representative Cahill said that he agreed with the analysis of how extended DST would affect electricity consumption in the morning and in the afternoon and evening, even though the electricity consumption of hospitals and similar organizations is to some extent fixed. Representative Frost said that because hospitals always have their lights on he is not sure that they would see savings. Mr. Shattuck said that savings would flow to everyone if year-round DST prevented a buildup of infrastructure to meet peak demand.

Senator Donoghue asked if the DoE study contained the best data available for the commission's purposes. Mr. Shattuck said that it was the best data available to the commission, and that the DoE study was more relevant than the Indiana study.

Senator Donoghue thanked Mr. Shattuck for his testimony and opened the commission meeting to general discussion. Representative Frost said that he remained concerned about children going to school in the dark and mentioned a study conducted in the 1970s that addressed the issue. He added that the commission should hear from Massport and also from television broadcasters, because residents might have to stay up late to watch the Patriots on Sunday Night Football. Representative Finn said that he would like to hear from the entire New England Region. Mr. LePage said that he wanted to hear about the impact year-round DST would have on student and employee performance, the financial services industry, and television broadcasters. In addition to the question of children going to school in the dark, Mr. Emswiler suggested that commission consider a paper published by the American Academy of Pediatrics recommending that school start times be pushed back to a later hour. Dr. Owens noted that she had written the paper. Mr. Emswiler added that Massachusetts could throw its weight around and force Sunday Night Football to start earlier. Representative Frost said that Roger Goodell would never agree to that.

Senator Donoghue said that it was clear that the commission members were very invested in the issue and that the commission would continue to learn more about it.

Senator Donoghue adjourned the meeting at 12:41 p.m.

Special Commission on the Commonwealth's Time Zone
Wednesday, April 12, 2017 (Meeting 3)

Massachusetts State House
Hearing Room 222
Boston, MA 02133

Members present (appointed by):

Representative Daniel Cahill (Speaker), Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Tim Miley (Governor), Robert LePage (Governor), Yvonne Spicer (Senate Minority Leader), John Warren (Governor)

Members absent (appointed by):

Dr. Judith Owens (Speaker), Peter Shattuck (Senate President)

Meeting Minutes

Senator Donoghue welcomed the members of the special commission and thanked them for being in attendance. She motioned that the minutes of the commission March 15 meeting be approved. Representative Cahill seconded the motion, and the minutes were approved unanimously on a voice vote.

Senator Donoghue introduced University of Washington professor Christopher M. Barnes and University of Oregon professor David T. Wagner, authors of the papers “Changing to Daylight Saving Time Cuts Into Sleep and Increases Workplace Injuries” and “Lost Sleep and Cyberloafing: Evidence From the Laboratory and a Daylight Saving Time Quasi-Experiment,” who joined the commission via conference call. Senator Donoghue noted that Mr. Barnes and Mr. Wagner specialize in, among other things, sleep and fatigue issues in the workplace and that of particular interest to the commission is their research and writing about the impact that transitioning to daylight saving time (DST) has on workplace injuries, workplace productivity, and even the sentencing habits of judges. She added that Mr. Barnes has also authored a paper making sleep-related public health policy recommendations.

Mr. Barnes and Mr. Wagner said that their study on workplace injuries measured the effect that transitioning in and out of DST has on sleep using data from the Bureau of Labor Statistics. They said that while they found no effect from the fall transition, workers lost an average of 40 minutes of sleep on the Monday following the spring transition. Mr. Barnes and Mr. Wagner then proceeded to describe the second piece of the study, which relied on 23 years of data from the Mine Safety and Health Administration. They noted that mines were a particularly useful workplace to examine, because mining work occurs largely underground and differences in sunlight would therefore not confound the data. Mr. Barnes and Mr. Wagner said that they found a 5.7 percent increase in the number of injuries on days following the spring transition to DST and a 67.6 percent increase in the number of days lost due to injury, suggesting an increase in the severity of the injuries.

Mr. Barnes and Mr. Wagner then moved on to their study on cyberloafing, the first part of which used Google search data from 203 metropolitan areas to determine whether workers were more likely to visit websites that were unrelated to their jobs on the Monday following a transition to DST. They said that they measured an increase in traffic to entertainment-related websites of between 3.1 and 6.4 percent, which they interpreted as a sign that workers were too tired to focus on their jobs. Mr. Barnes and Mr. Wagner explained that the second part of their study used data from a laboratory experiment to determine the impact of sleep interruption on cyberloafing. They said that they found that an hour of disturbed sleep led study participants to cyberloaf for, on average, 20 percent of the duration of an assigned task.

Mr. Barnes and Mr. Wagner then ran through many of their other studies, which have found that following the spring transition to DST judges hand out longer sentences, minorities are more frequently searched and arrested frivolously, the rates of heart attacks and fatal vehicle accidents increase, and children are less attentive in class and receive lower scores on the SAT. Thomas Emswiler asked if Mr. Barnes and Mr. Wagner could share those studies with the commission. Senator Donoghue said the commission would welcome them, and Mr. Barnes and Mr. Wagner said they would share the studies.

Senator Donoghue thanked Mr. Barnes and Mr. Wagner for their testimony and introduced Dr. David Prerau, a DST researcher, historian, and author. She noted that Dr. Prerau is a world-renowned authority on DST, the author of the book *Seize the Daylight: The Curious and Contentious Story of Daylight Saving Time*, which details the history, science, and politics of the practice, contributed to the largest ever technical study on DST, coauthored three reports to Congress on the subject, and served as a consultant to both the U.S. Congress and Britain's Parliament on legislation related to extensions of DST.

Dr. Prerau said that he was happy to be able to share his 40 years of expertise on DST with the commission. He noted that DST was first practiced during World War I and is now observed in 70 countries and in 48 states. He said that although people can adapt to losing an hour of sleep during the spring transition to DST, there are effects that resemble those caused by jet lag. Dr. Prerau added that these effects could perhaps be mitigated by a public health information campaign leading up to the transition date. He cautioned commission members to carefully distinguish between the effects of the transition to DST and the effects of the period itself.

Dr. Prerau said that one of the major benefits of year-round DST—more sunlight during winter afternoons—has a flipside: darker winter mornings. He noted that with year-round DST in place, January sunrise times would be as late as 8:23 a.m. in Boston and late as 8:23 a.m. in Williamstown. Dr. Prerau said that when Congress experimented with year-round DST in the 1970s there was a negative effect on the safety of children walking to school in the dark, prompting Congress to institute an eight-month DST schedule—longer than the usual six-month schedule, but shorter than the year-round experiment. He added that creating darker, colder commutes during January, the coldest month, could make roads icier or snowier, although he said there was no related data available.

Dr. Prerau said that year-round DST would create a four-month, one-hour time difference between Massachusetts and business and political capitals in New York City and Washington,

D.C., respectively. He noted that the difference would put the commonwealth out of sync with both the stock market and large markets along the East Coast, but had no data on what impact that might have.

Dr. Prerau went on to say that uniformity is a major concern when it comes to the observation of time, noting that after World War II there was hodgepodge of states and cities observing DST on different schedules, which caused chaos. He added that the Uniform Time Act of 1966 instituted national start and end times for DST. He added that following the 2007 extension of DST, Canadian provinces had to choose whether to adjust their DST calendars to match the U.S., and that ultimately every province elected to adopt the new U.S. calendar. He said that a lack of uniformity can affects business by causing confusion around deliveries, calls, and deadlines.

Dr. Prerau then mentioned a number of additional concerns related to Massachusetts ceasing to be in sync with the rest of the Eastern Time Zone, including potential confusion around flight schedules, later start times for live, nationally broadcast events like Sunday Night Football, the State of the Union address, and the Oscars, and the unpleasantness of living near the border between time zones.

John Warren asked if there are any studies of how lack of uniformity in DST observation affects the business community. Dr. Prerau said that there was anecdotal evidence of businesses choosing not to locate in Indiana and noted that the Indiana Chamber of Commerce preferred uniformity.

Representative Frost said he had not thought about the problem of kids going to school in the morning when—in addition to being dark—it is cold and icy. He noted that Massachusetts school districts sometimes delay school due to icy conditions or extreme cold. Dr. Prerau said that in 1974 some schools sought to avoid those problems by starting an hour later, which caused some conflicts with work. He added that some schools distributed reflective tape to students.

Senator Donoghue thanked Dr. Prerau for his testimony and introduced Jim Smith, general counsel to the Massachusetts Broadcasters Association (MBA), a trade organization that represents more than 200 radio and television broadcasters in the commonwealth.

Mr. Smith said that year-round DST would be hard to implement for Massachusetts broadcasters. He said that national evening news programs would be broadcast an hour later during the four-month period when Massachusetts would be out of sync with the rest of the Eastern Time Zone, affecting local evening shows. He added that the 8 p.m. to 11 p.m. slot for network programming would become a 9 p.m. to midnight slot, disrupting local news broadcasts, which are important to broadcasters' bottom lines and to the public interest.

Mr. Smith mentioned the potential for additional confusion in places like the Berkshires, where broadcasts are often coming from Albany. He said there would also be a need to educate broadcasters about the implications of the change to year-round DST, noting that there are sometimes restrictions on when syndicated shows can be broadcast. *The Ellen DeGeneres Show*, he said, is embargoed until a certain time. Mr. Smith said that radio would also be affected by the

change to year-round DST. He said that national news shows, for example, have to be coordinated across time zones.

Mr. Smith went on to say that the biggest complication of year-round DST would be the scheduling of live television events. He said that an event like the Oscars, which ended at around 12:10 a.m. this year, would instead end at around 1:10 a.m. With regard to sports, Mr. Smith said that p.m. is primetime for school and work night events and leagues would not alter their schedules to accommodate Massachusetts because the need to capture the West Coast market is greater than the need to capture the Massachusetts market. He said that even if every New England state observed year-round DST they would still be outliers, adding that there would be no changes in national live broadcast schedules if New York or Pennsylvania did not join New England.

Mr. Smith concluded by stating that the practical concerns of observing year-round DST are too great for the MBA to support it and by thanking the commission for including the MBA.

Representative Frost asked whether the MBA would be more supportive if New York changed to year-round DST in addition to New England. Mr. Smith said yes, reiterating that New England acting alone presents enormous issues to broadcasters.

Mr. Emswiler asked if local news was the biggest revenue source for broadcasters. Mr. Smith said it was. Mr. Emswiler asked if there were local news shows during morning hours. Mr. Smith said there were. Representative Frost asked if revenue earned from an additional hour of local news in the morning would offset revenue lost due to changes in local news schedules in the evening and at night. Mr. Smith said that it would not, because the 6 p.m. and 11 p.m. slots are the biggest revenue generators.

Senator Donoghue thanked Mr. Smith for his testimony and introduced José C. Massó, director of policy at Massport. She noted that Mr. Massó has also served as Massport's director of community relations and that he advises the agency on policies that might affect its ownership and management of Boston Logan International Airport, Hanscom Field, Worcester Regional Airport, and the Port of Boston.

Mr. Massó said that he was joined by Nancy Donoghue, Massport's director of government affairs, and Ed Freni, Massport's director of aviation. He noted that airports used universal time to communicate with each other, but not with the public, and said that a change to year-round DST would cause confusion in nearby destinations served by Logan International Airport, including New York City, Washington, D.C., and Atlanta. Mr. Massó added that a number of transportation services that connect to Logan, including rail and bus services, would have to adjust their schedules.

Mr. Massó said that Logan serves 36 million passengers each year, with millions of them taking international flights. He said that there is already a three weeks of the year during which the U.S. observes DST and Europe does not, which causes confusion and creates new challenges. Mr. Massó commented that there would be similar confusion were Massachusetts to observe year-round DST, although the situation might be better if all the New England states acted together.

Representative Frost asked whether Massport would be more supportive if New York changed to year-round DST in addition to New England. Mr. Massó said that it is important not to be an outlier, but the bigger the better when it comes to the size of the region observing year-round DST.

Representative Frost asked if the change to year-round DST would cause confusion for business travelers. Mr. Eni said that there would be a new layer of confusion.

Mr. Miley asked for further explanation of the challenges associated with the three weeks during which the U.S. observes DST and Europe does not. Mr. Eni said that during those three weeks there is a need for additional staff at gates and resources are needed to plan for the additional complexity. He added that the entire U.S. is dealing with that complexity during those three weeks.

Robert LePage asked about the impact on travelers going to airports in Hartford or Albany from Western Massachusetts. Mr. Eni said that if Massachusetts were out of sync with a neighboring state, then travelers would have to do the same mental calculations that they do now when traveling to a different time zone.

Mr. Warren asked if there were significant costs to nonconformity. Mr. Eni said that he did not have specific numbers, but that there would be staff costs, scheduling costs, and transaction costs.

Mr. Emswiler asked if most of Logan's passengers were from New England. Mr. Eni said yes, but not exclusively.

Representative Frost asked if there would be costs to an advertising campaign educating passengers about the change to year-round DST. Mr. Massó said there would be costs to such a campaign.

Mr. Miley asked what percentage of Logan's 36 million annual passengers stop at the airport to make a connection. Mr. Eni said about 10 percent of passengers are making a connection.

Senator Donoghue thanked Mr. Massó for his testimony and adjourned the meeting at 12:50 p.m.

**Special Commission on the Commonwealth's Time Zone
Wednesday, May 31, 2017**

**Massachusetts State House
Hearing Room 222
Boston, MA 02133**

Members present (appointed by):

Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Yvonne Spicer (Senate Minority Leader), John Warren (Governor); Dr. Judith Owens (Speaker), Representative Daniel Cahill (Speaker),

Members absent (appointed by):

Peter Shattuck (Senate President), Tim Miley (Governor), Robert LePage (Governor)

Meeting Minutes

Senator Donoghue welcomed the members of the special commission and thanked them for being in attendance. She motioned that the minutes of the commission April 12 meeting be approved. The minutes were approved unanimously on a voice vote.

Senator Donoghue introduced commission member Dr. Judith Owens, director of the Center for Pediatric Sleep Disorders at Boston Children's Hospital and a professor of neurology at Harvard Medical School, to discuss the impacts of year-round DST on student sleep, health, and safety.

Dr. Owens began her presentation by introducing basic background information on the function of sleep. She explained that sleep is regulated by two simultaneous processes, the 24 hour circadian rhythm of sleep/wakefulness and the sleep drive. Dr. Owens said that the sleep drive is contingent on a number of factors including how long a person has been awake, the quantity and quality of the person's previous night's sleep, and the person's individual sleep needs. She then provided a more thorough explanation of the circadian timing system, the governing function of all physiologic systems in the human body. She explained that each cell in the body possess an internal clock that must be synchronized with other cells and with the environment, adding that misalignment between the internal clock and the external light-dark cycle can have negative consequences for a person's physiologic function and health. Dr. Owens stressed that it is not just how much a person sleeps, but also when a person sleeps that has a significant impact on well-being. Dr. Owens explained that sleep regulation consists of two competing functions, the homeostatic sleep drive and the circadian wake drive, which fluctuate throughout the day and impacts a person's level of alertness.

Dr. Owens said that it is critically important for adolescents to get a healthy amount of sleep every night. She explained that all adolescents experience a shift in their sleep patterns, especially with the onset of puberty, and that as a result of this biological shift, sleep times and wake times change drastically. According to Dr. Owens, adolescents are biologically programmed to wake up at 8 a.m. or later, but due to school start times, many teens are required

to wake up much earlier, at a point in their sleep cycle when they are the least alert. As a result, Dr. Owens said, many adolescents are not sleeping enough during the week and trying to compensate by sleeping in on weekends. She added that from a biological perspective, sleeping in cannot make up for insufficient sleep during the week and can actually exacerbate problems with the body's sleep cycle, a phenomenon known as "social jet lag" that can persist for up to three days, causing daytime sleepiness, poor concentration, or a depressed mood. Dr. Owens stated that eight to 10 hours of average sleep is needed for middle school and high school students to maintain optimal health, safety, and achievement, while children ages six to 12 need nine to 12 hours of sleep.

Dr. Owens then discussed sleep's effect on performance, health, and safety. She explained that either too much sleep or too little sleep can drastically change the brain's ability to function in response to the environment, impacts gene activation, slows the ability to recover from stress, and causes the release of stress hormones. Dr. Owens added that lack of sleep has serious negative impacts on executive functions such as planning, problem solving, decision making, divergent thinking, judgment, motivation, and emotional response. In addition, she said that the reward-related functions of the brain undergo changes during adolescence that, if combined with insufficient sleep, can impact teen's decision making behaviors and their ability to perceive negative consequences, which leads to increased risk taking. Dr. Owens said that teens who slept for fewer than eight hours on average were more likely to be involved in physical altercations, smoke cigarettes or marijuana, drink alcohol, be sexually active, feel sad or hopeless, and have considered suicide than teens who slept for eight or more hours on average.

Dr. Owens went on to explain the effects of sleep loss on a person's diet. Dr. Owens stated that studies have shown that lack of sleep can be associated with an increased risk of obesity; as a person's sleep duration affects hunger, food intake, eating patterns, physical activity, and insulin metabolism.

According to Dr. Owens, drowsy driving accounts for roughly 7% of all crashes in which a vehicle is towed from the scene, 13% of crashes that result in hospital admission, and 16-21% of all fatal crashes. Dr. Owens expounded upon this by stating that driver who are 16 to 25 years of age are involved in more than 50% of the 100,000 police-reported fatigue-related crashes each year. Dr. Owens stressed the dangers our drowsy driving by informing the commission that sleep loss impairments can be just as dangerous as alcohol intoxication in drivers.

Dr. Owens then transitioned her presentation to the topic of school start times and how adolescents would greatly benefit from additional sleep. Dr. Owens shared with the committee that the American Academy of Pediatrics recommended that schools not start until 8:30 AM or later, to allow teens to get the appropriate amount of sleep during the growth years.

Dr. Owens presented information that supports the concept of delayed school start times and went on to explain that even a modest delay of 30 minutes has been shown to have significant impacts on student health and academic achievement. Dr. Owens continued to support this claim by stating that students who get more sleep have improved attendance, lower rates of tardiness, higher grades, and a declined dropout risk. Dr. Owens also shared delayed start times are

associated with improvements in mood, health, and safety; as there is a significant decline in early morning car accidents amongst teenaged drivers.

Dr. Owens then went on to present information on elementary school start times and how the data is not as extensive as studies that have been done on middle school and high school students. Dr. Owens says that this lack of data is due to school-aged children being more likely to be “morning people” who have a strong preference for earlier bed and wake times.

Dr. Owens included detailed information on Massachusetts public school start times. According to a study presented by Dr. Owens, the average start time for public schools in Massachusetts was 7:53 AM in the 2011-2012 school year, but dropped to 7:37 AM in the 2014-2015 school year. Dr. Owens also shared that in the 2011-2012 school year only 8% of all Massachusetts public schools started before 7:30 AM, but that average has increased to 26% during the 2014-2015 school year.

Dr. Owens then proceeded to explain the concept of civil twilight. According to Dr. Owens, civil twilight is when the sun is just below the horizon and there is enough natural light to have high visibility to do most outdoor activities. Dr. Owens stated that civil twilight occurs in Massachusetts approximately 30 minutes before sunrise.

Dr. Owens presented information highlighting the impact that shifting time zones has on civil twilight and sunrise in Massachusetts. According to Dr. Owens, civil twilight and sunrises occurs 30 minutes to an hour later during daylight saving time in the months of November, December, January, and February than when on Eastern Standard Time. Dr. Owens proceeded to explain what this effect has on school start times.

According to Dr. Owens, if school starts between 7:00 AM and 7:30 AM, commutes will be in complete darkness for almost all four months and before sunrise for all four months; if school starts between 7:30 AM and 8:00 AM, commutes will be before civil twilight for three months and before sunrise for most of four months; if school starts between 8:00 AM and 8:30 AM, commutes will be before civil twilight for two months and before sunrise for two months; and if school starts at 8:30 AM or later, commutes will be after civil twilight for all four months and after sunrise for most of four months.

Dr. Owens went on to discuss safety concerns for elementary school students in regards to early morning commutes. According to Dr. Owens, shifting time zones would increase the number of days that elementary school children would be waiting for the bus or walking to school before sunrise. Dr. Owens stated that additional safety measures may be needed, such as; lighted bus stops, neighborhood school bus stop monitoring by parents when it is dark in the winter; and walking patrols.

Dr. Owens then discussed potential safety concerns for high school students. Dr. Owens explained that high school students may be more prone to exacerbated seasonal affective disorder and increased car accidents due to lack of light in the morning hours of winter. Dr. Owens also provided information showing that there are significantly more teen involved car crashes in the morning during the school year than during the summer.

Dr. Owens concluded her presentation by stating that she would support Massachusetts changing time zones only if delayed school start times would be considered in the commission's final recommendations. Dr. Owens stated that due to concerns for sleep, health, and wellbeing, all Massachusetts schools should start after 8:00 AM and all middle school and high schools should start after 8:30 AM.

Senator Donoghue then introduced commission member and public health advocate Thomas Emswiler. Mr. Emswiler greeted the commission and began a presentation on the public health impacts that daylight saving time has on the human body.

According to Mr. Emswiler, shifting daylight patterns and sleep deprivation accounted for 30 daylight saving time related fatalities annually in the United States between 2002 and 2011. Mr. Emswiler also elaborated to explain that daylight saving time had a societal cost of \$275 million annually in the United States.

Mr. Emswiler then went on to explain the immediate health impacts that daylight saving time has on public health. According to Mr. Emswiler, there is an increased likelihood of heart attack within the first three days of transitioning to daylight saving time, with those under the age of 65 being affected the most.

Mr. Emswiler also stated that when the United States expanded daylight saving time in the United States, there was a 30 minute increase in daily outdoor recreation, a nine minute decrease in television viewing, and people burned 10% more calories; one pound of body fat every 2.5 weeks.

Mr. Emswiler then concluded his presentation by explaining that the shift to daylight saving time is responsible for increased workplace injuries and springing forward is bad for people's health.

Senator Donoghue thanked the speakers for their testimony.

The Commission members engaged in general discussion concerning the testimony from the speakers. The meeting was adjourned at 12:45 p.m.

**Special Commission on the Commonwealth's Time Zone
Wednesday, September 20, 2017**

**Massachusetts State House
Hearing Room 222
Boston, MA 02133**

Members present (appointed by):

Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Dr. Yvonne Spicer (Senate Minority Leader), Dr. Judith Owens (Speaker), Representative Daniel Cahill (Speaker), Mr. Peter Shattuck (Senate President), Ms. Jennifer Barrelle (Governor), Mr. Robert LePage (Governor)

Members absent (appointed by):

Mr. John Warren (Governor)

Meeting Minutes

The meeting opened at 2:00 p.m. as Senator Donoghue welcomed the members of the special commission and thanked them for being in attendance. She motioned that the minutes of the commission May 31 meeting be approved. The minutes were approved unanimously on a voice vote.

Senator Donoghue introduced new commission member Jennifer Barrelle, Chief of Staff to the Department of Public Health. Ms. Barrelle will fill the commission appointment previously held by Tim Miley, formerly of the Department of Public Health.

Senator Donoghue explained that the purpose of today's meeting is to have a general discussion about the draft report that was circulated to the commissioners, and that there would not be a vote during this meeting.

Senator Donoghue opened the session to comments from fellow commissioners.

Representative Frost offered comments about the draft report and said that he believed Massachusetts could not switch time zones without New York, and expressed concern about the safety of children in the dark if a switch were to be made. He offered further comments cautioning about potential negative implications of pushing everyone back and suggested that the remedy to his concerns may be the need for more study. He also thanked the commissioners for a good commission with spirited debate and stated it was his belief that the commission was worthwhile even if they did not all agree.

Senator Donoghue responded and said she first wanted to recognize that this commission was a result of a citizen's petition to explore a serious and worthwhile issue, and that she appreciated the civic participation in the Legislature. Senator Donoghue went on to explain that the report was a data-driven analysis that looked into many factors and found there is no solid data as to

why we continue to spring forward and fall back in 2017. She also emphasized the positive economic development and public safety implications of making a switch and went over the recommendations being offered including the need for a regional approach, the idea of starting school start times later to ameliorate safety concerns, and the need to engage in educational public outreach programs if any switch were to be effected.

Dr. Owens spoke next and commented that she viewed the report as a superb draft that captured the substance of the testimony. Dr. Owens asked about when the report and recommendations would be implemented and what kind of lead time would be required. Senator Donoghue said that the final report would be issued to the Legislature and then it would be up to the body to decide whether to file legislation to move the process forward. She added that public involvement would be critically important. Mr. Emswiler added that the last time the dates for recognizing daylight saving time changed, the state had three years to prepare, and suggested that nothing should be done without at least one year of lead time.

Representative Cahill inquired about when comments to the draft should be submitted and it was decided that comments would be due to the Chair by Monday, October 2, and that a final meeting to vote on the report would occur on November 1.

Mr. Shattuck suggested that the draft include reference to forums at the executive level to continue the discussion and recommend that the executive branch is directed to bring this issue up with other governors/administrations including the Coalition of Northeast Governors (CONEG) and the annual gathering of New England Governors and Eastern Canadian Premiers (NEG-CEP).

Mr. Emswiler asked the commission what members thought would be the right number of states or percentage of the New England population to consider necessary in order to have regional action to make a switch. There was general discussion of this issue with Representative Frost and Mr. LePage stating that a change would need to include New York because New York is more important to Massachusetts' commerce than Vermont. Mr. LePage added that, regardless of the number of states that would make a switch in the future, we as a state should do more now to help manage our current system better. Public health announcements or campaigns about the impacts of "springing forward" and "falling back" might be useful.

The meeting was adjourned at 2:45 p.m.

STATEMENT BY ALBERT SCHERR
PROFESSOR OF LAW, UNH FRANKLIN PIERCE SCHOOL OF LAW
HOUSE EXECUTIVE DEPARTMENTS & ADMINISTRATION COMMITTEE
HOUSE BILL 499
FEBRUARY 11, 2021

I have been on the faculty at UNH Law for over 25 years and, prior to that, I was a public defender in New Hampshire for 13 years. I teach, write and lecture about privacy issues in the criminal justice system. I have been involved in the criminal justice system in New Hampshire for almost 39 years and have worked closely and on a bipartisan basis with many legislators on criminal justice reform issues. In particular, I worked with then Representative Neal Kurk on what became Part I, Article 2b of the New Hampshire Constitution, NH's constitutional amendment on privacy. Recently, I chaired the Portsmouth Police Commission's sub-committee on bodycams, tasked with deciding whether the Portsmouth Police Department should adopt bodycams.

As always, I make this statement in my individual capacity, and the opinions I am expressing are solely mine and are not those of either UNH Franklin Pierce School of Law or of the University of New Hampshire. I appreciate the opportunity to provide this statement to this committee and ask you to amend HB 499 as written with the proposed amendment and *Ought to Pass* on the amended HB 499.

THE EVER-INCREASING WAVE OF 21ST CENTURY TECHNOLOGY I have been involved in the criminal justice system in New Hampshire long enough to have witnessed the transition from 20th century technology like fingerprints, pen registers, wiretaps and house searches to 21st century technology like surreptitious DNA harvesting, geolocation cellphone searches and Global Positioning System (GPS) surveillance. Facial surveillance systems are another, newer installment of 21st century technology that, like others, focuses much more on the acquisition of intangible information than physical objects.

Facial surveillance technology allows the government, if it so desires, to track your whereabouts in public; to capture a digital representation of your face; to store your digital face in a database with millions of others forever and to search it whenever they wish for whatever purpose they wish. Currently, it is estimated that 117 million American adults – approximately half of all American adults - are in a law enforcement face recognition network.

Effectively, this technology allows the police to replace live and photo-lineup eyewitness identification procedures that are well-regulated in terms of reliability, suggestiveness and other issues by tight constitutional due process and right to counsel concerns with an unregulated, freestyle artificial intelligence system driven by technician-generated algorithms.

The use of facial recognition technology implicates several concerns, constitutional as well as practical. In this statement, I intend to discuss the constitutional concerns and then to focus primarily on the paramount practical concern with facial recognition technology: its verified unreliability. In essence, putting aside the very real legal concerns, permitting this technology does not make practical sense.

CONSTITUTIONAL CONCERNS WITH FACIAL RECOGNITION TECHNOLOGY

Constitutionally, 20th century technology was regulated reasonably well by the U.S. Supreme Court's interpretation of the 4th Amendment and the NH Supreme Court's interpretation of Part I, Article 19 of the New Hampshire Constitution. Though both read like they protect our privacy in physical objects or locations, the courts have worked hard to adapt the language to circumstances where the invasion of privacy was not technically physical but rather a collection-of-non-tangible-information.

The 21st Century has brought vastly more sophisticated technologies to the table. Several of those technologies implicate privacy-in-public issues. Let me speak of one U.S. Supreme Court case that captures the problem that courts have been confronting with 21st century technology, particularly with acquiring personal information from someone in a public place. In *U.S. v. Jones*, the Washington D. C. police put a GPS tracking device on the bottom of Jones's SUV. They suspected him of being a drug dealer and wanted to track his whereabouts. They then tracked him for 10 days and acquired a wealth of information about his daily habits in public. The issue in the case was whether the police needed a search warrant to place the GPS on the SUV to gather the public-whereabouts information.

The U.S. Supreme Court said yes, the police needed a search warrant as Jones had a 4th Amendment reasonable expectation of privacy even in his public whereabouts as gathered by the police. This is a very important decision that explicitly protects a version of publicly-available personal information.

There is no question that if a police officer had simply tailed Jones in the old-fashioned way, no 4th Amendment privacy interest would have been implicated. But, a high-tech tailing that collected the same publicly-available information received 4th Amendment protection. Acquisition by the police of a digital representation of one's face and its placement in a massive database implicates the same 4th Amendment concerns. The use of such a digital representation to track someone's whereabouts similarly invokes the 4th Amendment.

What's even more concerning is that the use of any digital facial representation with the database is unreliable.

FACIAL SURVEILLANCE TECHNOLOGY & THE NOT-READY-FOR-PRIME-TIME PROBLEM

New Hampshire is not the first to contemplate banning this invasive technology. Nationally, several municipalities have already banned facial surveillance technology, including San Francisco & Oakland in California and Cambridge and Somerville in Massachusetts. Internationally, the European Union is seriously considering a five-year pause in the use of facial surveillance technology. My understanding is other municipalities and the State of New York are also considering bans.

The primary issue in these jurisdictions has been the unreliability of facial surveillance technology. A recent federal report from the National Institute of Standards & Technology (NIST) found that the technology was unreliable when used to identify people of color, women, the elderly and youth. What's more, its unreliability included both false positives and false negatives.

Specifically, it found that “false positives are higher in women than in men and are higher in the elderly and the young compared to middle-aged adults. Regarding race, we measured higher false positive rates in Asian and African American faces relative to those of Caucasians. There are also higher false positive rates in Native American, American Indian, Alaskan Indian and Pacific Islanders. These effects apply to most algorithms, including those developed in Europe and the United States.” Not infrequently, these false positive rates were of an order of magnitude or more greater. In one instance, it found that Asian and African American faces were sometimes misidentified 100 times more than their white counterparts.

Beyond such state and municipality regulatory efforts, businesses have assessed the reliability and usefulness of facial recognition technology. Axon Corporation is one of the leading providers of police-technology in the United States. For example, they provide bodycam technology to many police departments, including some in New Hampshire. As a part of their commitment to corporate responsibility, they have an Artificial Intelligence (AI) and Policing Technology Ethics Board.

The Board “operates independently from the company and is made up of experts in the fields of AI, computer science, privacy, law enforcement, civil liberties, and public policy. The Board advises Axon around ethical issues relating to the development and deployment of AI-powered policing technologies and works to ensure these technologies ultimately serve the communities where they will be used.”

Significantly, based on recommendations from this independent Board, Axon made the decision that it was not good business for them to make facial recognition technology a part of their bodycam packages they were selling to police departments. They said:

“Face recognition technology is not currently reliable enough to ethically justify its use on body-worn cameras. At the least, face recognition technology should not be deployed until the technology performs with far greater accuracy and performs equally well across races, ethnicities, genders, and other identity groups. Whether face recognition on body-worn cameras can ever be ethically justifiable is an issue the Board has begun to discuss, and will take up again if and when these prerequisites are met.”

<https://www.policingproject.org/axon-fr>

Appreciate carefully what Axon has decided. They make money off technology packages they sell to police departments. They would make more money off packages that include facial-recognition technology. Nonetheless, they have decided not to include that technology in the packages they sell *because facial recognition technology is not currently reliable enough to ethically justify its use on body-worn cameras. Its use is not good business for them.*

CONCERNS WITH HB 499 AS WRITTEN

As currently written, HB 499 is legislation that is pro-facial recognition technology (FRT) surveillance. It allows its use for 72 hours without a warrant; without probable cause and without even reasonable suspicion. After 72 hours, it either allows its use with a “court

order” that, as written, requires neither probable cause nor that the police meet any other set of criteria for issuance.

It also creates exceptions that allow the police to surveil an individual or a group of individuals without even an ill-defined court order if they think – that is, they have “reasonable grounds” - that they’ll be able to get a court order after the fact. It also speaks of an officer being able to surveil someone with FRT as long as they have “exigent circumstances” but it leaves out the primary requirement of the use of the exigent-circumstances exception under the Fourth Amendment: the existence of probable cause to believe a crime has been committed and evidence of that crime will be found by use of FRT surveillance.

As currently written, HB 499 is a pro-FRT bill.

PROPOSED AMENDMENT TO HB 499

The proposed amendment to HB 499 simplifies and clarifies HB 499. IT says simply, to use FRT you must have a search warrant supported by probable cause and issued by a neutral and detached magistrate. It cures any constitutional problems with FRT surveillance as it does not have a 72-hour unrestrained-freedom-of-use provision; it does not have the expansive exceptions to the illusion of an FRT surveillance ban contained in HB 499 as written and it is abundantly clear that probable cause as determined by a neutral and detached magistrate is required.

CONCLUSION

New Hampshire needs to confront the constitutional privacy issues that face recognition and surveillance technology raises. Those constitutional concerns are adequately addressed by HB 499 with the proposed amendment. I ask you to amend HB 499 as written with the proposed amendment and ***Ought to Pass*** on the amended HB 499.



MOTION PICTURE ASSOCIATION, INC.

1600 EYE STREET, NORTHWEST

WASHINGTON, D.C. 20006

(202) 293-1966

MEMORANDUM IN OPPOSITION TO NEW HAMPSHIRE HOUSE BILL 85

- The Motion Picture Association of America, on behalf of the broadcast affiliates of its member companies, which includes NBC, ABC, CBS, and Fox, respectfully opposes House Bill 85.
- This bill would put New Hampshire residents woefully out of step with the rest of the states in the Eastern Time Zone, by requiring them to conform permanently to Atlantic Standard Time.
- Broadcasters may be forced to air their current programming one hour earlier than New Hampshire residents have come to rely upon.
- The well-ingrained viewing habits of New Hampshire residents would likely be disrupted. Viewers accustomed to watching their favorite news and other programming would have to adjust to their much-anticipated and relied-upon programming occurring at different times, times at which they may be unable to view because of unalterable work schedules and other previous commitments.
- Many people plan their lives around their favorite TV programming. To have the timing of it changed would not only disappoint New Hampshire residents, but it would disrupt viewing habits and patterns, and lead to decreased viewership in many cases.
- It would be impossible for broadcasters to compensate for the decline in advertising revenue that such a decline in viewership would certainly precipitate.
- We respectfully submit that such a move to permanent Atlantic Standard Time is bad for New Hampshire residents and bad for the broadcasters who serve the state, and we urge the New Hampshire legislature to defeat this bill.



NEW HAMPSHIRE ASSOCIATION OF BROADCASTERS

Tracy Caruso, Executive Director, NHAB
PO Box 5578
Manchester, NH 03108

To the Members of the House ED&A Committee:

On behalf of the state's radio and television stations, I am writing to urge you to reject HB 85, relative to using the Atlantic Time Zone in New Hampshire. This proposal would wreak havoc with many of the schedules and broadcasts of our member stations and create an undue burden on our ability to entertain and inform our viewers and our listeners. NHAB is not opposed to the idea of shifting an hour ahead to the Atlantic Time Zone. It is the way in which this legislation implements the change state-by-state that causes broadcasters such great concern.

For example, if approved, three states (Maine, Massachusetts and New Hampshire) would have broadcast schedules one hour ahead of neighboring states. This will upset broadcast start times, including live broadcasts and major sporting events such as the NFL, NBA, NHL and MLB.

There is the issue of the syndication of programs that all of the radio broadcasters carry simultaneously. If some states go forward with this, radio stations will have a considerable amount of disruption to the listener ratings data, known as BOSTON DMA, which includes MA, NH, RI, ME and VT. This data is what sets ad rates for various shows and time segments.

WMUR's General Manager Jeff Bartlett says prime time, the most lucrative revenue window for evening programming, would start at 9pm not 8pm for New Hampshire, which would dramatically impact revenues and sales schedules. National networks feed content to affiliates at the same specific time to all states in the Eastern Time Zone. Asking major networks and every cable channel to create a new feed for three states would not be likely.

Live programs would all run at different times. Good Morning America would start at 8am not 7am. World News Tonight would run at 7:30. Primetime football games would all start an hour later, which means you're watching games to the end around midnight or 1am local time.

At NH Public Television, all national programs would begin an hour later than the rest of the surrounding states which would undoubtedly cost views, and as a viewer-supported station, relying heavily on donations from the public, this would have a dramatic and catastrophic effect on fundraising and revenues.



NEW HAMPSHIRE ASSOCIATION OF BROADCASTERS

Radio impacts are also dramatic. Matt Houseman, General Manager at Great Eastern Radio, located in the Hanover area, oversees multiple stations on the state line with Vermont. If NH is an hour ahead of VT, Houseman is not sure how to schedule the two stations with time zone differences and a mixture of live and pre-produced programs colliding throughout the day. A prime example would be that WHDQ is a Greg & The Morning Buzz affiliate, along with WKKN and WRFK/WWFK licensed in VT. This popular morning show currently runs from 6-10 am. If the NH program starts an hour later in New Hampshire, as a live program it would really be difficult to manage considering it starts at a different hour in Vermont. It throws the entire broadcast schedule off.

NH has several AM stations that are either directional or daytime-only. These stations have certain power levels and/or directional patterns that they must maintain for the hours between local sunrise and sunset and local sunset and sunrise. Some stations even have certain parameters during what the FCC calls “critical hours”, which is two hours after sunrise and two hours before sunset. A one-hour time difference will be a nightmare for AM’s that share frequencies with stations in other states.

As a region that is passionate about its professional sports teams, anyone who has ever dealt with orphan counties, blackouts, or other sports-related TV issues knows there’s nothing more important than sports scheduling. Games would start well after bedtime on the East Coast, and international programming like the Olympics – for which contracts are set long in advance – would be thrown into chaos. Same goes for other popular live shows like the Oscars.

A national conversation is a more favorable way to make this change than for states to go it alone or in small, random clusters. Although less certain and more difficult to achieve, from the broadcasters’ perspective, this is a conversation that **MUST** be done at the federal level, with the entire time zone considering the implications, not just a coalition of states. We recommend state leaders consult with Congressional leaders to make time zone adjustments that make sense for the entire country. Please vote no on HB 85.

Sincerely,

Tracy Caruso, Executive Director, NHAB



SAVE STANDARD TIME

SaveStandardTime.com • Twitter.com/SaveStandard • info@SaveStandardTime.com • San Francisco, California

2021 February 9

New Hampshire House of Representatives
Executive Departments & Administration Committee
Concord, New Hampshire 03301

Re: HB-85: Oppose—Amend to permanent Eastern Standard Time

Dear Honorable Legislators,

Thank you for your commitment to the well-being of all in New Hampshire. I write on behalf of my nonprofit to ask you oppose HB-85, to refer it to the Committees on Health, Children, and Education, and to recommend its amendment to permanent Eastern Standard Time (draft amendment attached).

HB-85 seeks permanent Atlantic Standard Time, which is permanent Eastern Daylight Saving Time (DST) at New Hampshire's longitude. Science and history show permanent DST to be more harmful than clock change. Permanent Eastern Standard Time can instead improve health with better sleep, it will protect start times with morning sunlight, and it is pre-approved by the US 1966 Uniform Time Act.

Scores of organizations representing thousands of scientists/doctors and millions of teachers/parents oppose permanent DST and endorse permanent Standard Time. These include the National PTA, National Safety Council, American Academy of Sleep Medicine, American College of Chest Physicians, American College of Occupational & Environmental Medicine, Start School Later, American Academy of Dental Sleep Medicine, and Society for Research on Biological Rhythms.^{[AASM][CSC][ESRS][RIVM][SRBR]}

The CDC has declared sleep deprivation to be a nationwide epidemic.^[Jin] Springing clocks forward to DST acutely deprives sleep. Leaving clocks forward on DST chronically deprives sleep (average 19 minutes nightly). An hour delay of sunrise each day (such as by DST) manifests as statistically significant increases in accidents, diseases (cancers up 12–36%), and healthcare costs, and as statistically significant decreases in education, productivity, and wages (down 3–5%). It's not just clock change that harms. Longitudinally correct Standard Time preserves morning sunlight, when human biology needs it most.^{[AASM][Borisenkov][CSC][Curtis][ESRS][Gibson][Giuntella][Gu][Jenkins][Juda][RIVM][Roenneberg][SRBR][Watson]}

Scientific polling shows strong public support to end clock change, with slight preference for Standard Time.^[AP] History shows public support for permanent DST reverses to opposition once its dark winter mornings are experienced.^{[BBC][Ripley][Yorkshire]} Permanent DST would delay New Hampshire's sunrises past 8:20am, and past 8am for 2.2 months. Biologists urge school

should start no earlier than 8am or 8:30am Standard Time—which is 9am or 9:30am DST. Permanent DST would undo the benefits of starting school later, and disrupt parents' work hours.^{[Cell Press][Skeldon & Dijk]} Standard Time keeps sunrises before 8am, when most work/school starts,^{[CDC][Silver]} for healthier sunlight exposure, circadian alignment, sleep, alertness, immunity, and productivity.

Please listen to history and to the consensus of biologists and teachers. Oppose HB-85 until it is amended to permanent Eastern Standard Time.

Sincerely yours,



Jay Pea
Save Standard Time
PO Box 40238
San Francisco, California 94140
jay@SaveStandardTime.com
+1-415-484-3458

American Academy of Sleep Medicine (2020). "Call for Elimination of Daylight Saving Time". *Journal of Clinical Sleep Medicine*. <https://aasm.org/american-academy-of-sleep-medicine-calls-for-elimination-of-daylight-saving-time/>

AP-NORC (2019). "Daylight Saving Time vs Standard Time". *Center for Public Affairs Research*. <https://apnorc.org/projects/daylight-saving-time-vs-standard-time/>

BBC (2014). "Russia: Putin Abolishes 'Daylight Savings' Time Change". *BBC News*. <https://www.bbc.com/news/blogs-news-from-elsewhere-28423647>

Borisenkov et al (2016). "Seven-Year Survey of Sleep Timing in Russian Children and Adolescents". *Biological Rhythm Research*. https://www.researchgate.net/publication/307547013_Seven-year_survey_of_sleep_timing_in_Russian_children_and_adolescents_chronic_1-h_forward_transition_of_social_clock_is_associated_with_increased_social_jetlag_and_winter_pattern_of_mood_seasonality

Canadian Society for Chronobiology (2019). "Turn Back the Clock on Daylight Savings: Why Standard Time All Year Round Is the Healthy Choice". *The Globe and Mail*. <https://www.theglobeandmail.com/opinion/article-turn-back-the-clock-on-daylight-savings-why-standard-time-all-year/>

Cell Press Staff (2019). "Permanent Daylight Savings May Cancel Out Changes to School Start Times". *EurekAlert!*. https://www.eurekalert.org/pub_releases/2019-04/cp-pds041819.php

Centers for Disease Control and Prevention (2015). "School Start Times for Middle School and High School Students – United States, 2011–12 School Year". *Morbidity and Mortality Weekly Report*. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a1.htm>

Curtis (2019). "Daylight Saving Time: Harmed by Hands of the Clock". *The Irish Times*. <https://www.irishtimes.com/opinion/daylight-saving-time-harmed-by-hands-of-the-clock-1.4064179>

European Sleep Research Society (2018). "Joint Statement". *EU Commission on DST*. <https://esrs.eu/joint-statement-to-the-eu-commission/>

Gibson & Shrader (2015). "Time Use and Productivity: The Wage Returns to Sleep". *Williams College Department of Economics Working Papers*. <https://econpapers.repec.org/paper/wilwileco/2015-17.htm>

Giuntella & Mazzonna (2017). "Sunset Time and the Economic Effects of Social Jetlag Evidence from US Time Zone Borders". *Journal of Health Economics*. <https://www.sciencedirect.com/science/article/abs/pii/S0167629618309718>

Gu et al (2017). "Longitude Position in a Time Zone and Cancer Risk in the United States". *Cancer Epidemiology, Biomarkers & Prevention*. <https://cebp.aacrjournals.org/content/26/8/1306>

Jin & Ziebarth (2019). "Sleep, Health, and Human Capital: Evidence from Daylight Saving Time". *The National Bureau of Economic Research*. <https://ideas.repec.org/p/yor/hectdg/15-27.html>

Juda et al (2019). "An Open Letter to the BC Government in Support of Permanent Standard Time". *Simon Fraser University*. <https://vault.sfu.ca/index.php/s/sAnv3Z4bcSwY4Gm>

Ripley (1974). "Senate Votes Return to Standard Time for Four Months and Sends Bill to Ford". *The New York Times*. <https://www.nytimes.com/1974/10/01/archives/senate-votes-return-to-standard-time-for-four-months-and-sends-bill.html>

RIVM (2019). "Standard Time More Beneficial for Public Health Than Summer Time". *Rijksinstituut voor Volksgezondheid en Milieu*. <https://www.rivm.nl/en/news/standard-time-more-beneficial-for-public-health-than-summer-time>

Roenneberg et al (2019). "Daylight Saving Time and Artificial Time Zones – A Battle Between Biological and Social Times". *Frontiers in Physiology*. <https://www.frontiersin.org/articles/10.3389/fphys.2019.00944/full>

Silver (2014). "Which Cities Sleep In, and Which Get to Work Early". *FiveThirtyEight*. <https://fivethirtyeight.com/features/which-cities-sleep-in-and-which-get-to-work-early/>

Skeldon & Dijk (2019). "School Start Times and Daylight Saving Time Confuse California Lawmakers". *Current Biology*. [https://www.cell.com/current-biology/fulltext/S0960-9822\(19\)30312-4](https://www.cell.com/current-biology/fulltext/S0960-9822(19)30312-4)

Society for Research on Biological Rhythms (2019). "Why Should We Abolish Daylight Saving Time?". *Journal of Biological Rhythms*. <https://srbbr.org/advocacy/daylight-saving-time-presskit/>

Watson (2019). "Time to Show Leadership on the Daylight Saving Time Debate". *Journal of Clinical Sleep Medicine*. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6557642/?report=classic>

Yorkshire (2018). "British Summer Time: Why Do We Change the Clocks?". *Yorkshire Evening Post*. <https://www.yorkshireeveningpost.co.uk/news/uk-news/british-summer-time-why-do-we-change-clocks-313791>

Atlantic Standard Time in New Hampshire is Eastern Daylight Saving Time.

"Permanent Standard Time is the only fair, viable option."

"Permanent Daylight Saving could create real health/safety issues.
Humans require adequate morning light so that our
internal biological rhythms synchronize properly to local time.
Lack leads to metabolic disorders, depression, cardiovascular disease..."

Chancellor Gene Block PhD, UCLA
Prof Johanna Meijer PhD, Leiden University

<https://newsroom.ucla.edu/stories/who-wants-to-go-to-work-in-the-dark>

 **SAVE STANDARD TIME**

"The human circadian system does not adjust to Daylight Saving Time."

Sleep becomes disrupted, less efficient,
and shortened. Permanent Standard Time
is the healthier, more natural choice."

Nathaniel F Watson MD MSc
Neurology Professor, University of Washington, Seattle

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6557642/>

 **SAVE STANDARD TIME**

Most work/school starts at 8am. How would you rather start your day half the year?



Permanent Standard Time is the safest, healthiest, quickest end to clock change.

 **SAVE STANDARD TIME**

8:03am average school start in the US. CDC, US ED, SASS, 2015. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a1.htm>
7:55am median work arrival in the US. 538, ACS, USCB, 2014. <https://livefortyeight.com/features/which-cities-sleep-in-and-which-get-to-work-early/>

Most work/school starts at 8am. How would you rather start your day half the year?



Permanent Standard Time is the safest, healthiest, quickest end to clock change.

 **SAVE STANDARD TIME**

8:03am average school start in the US. CDC, US ED, SASS, 2015. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a1.htm>
7:55am median work arrival in the US. 538, ACS, USCB, 2014. <https://livefortyeight.com/features/which-cities-sleep-in-and-which-get-to-work-early/>

"Cancer rates significantly increase when sunrise is later."

"Permanent DST would make sunrise later,
while permanent Standard Time would
make sunrise closer to body time."

Nicolas Cermakian PhD
President, Canadian Society for Chronobiology

<https://www.theglobeandmail.com/opinion/article/turn-back-the-clock-on-daylight-savings-why-standard-time-all-year/>

 **SAVE STANDARD TIME**

"National PTA is opposed to Daylight Saving Time during the winter months because of the safety factor."

Heidi May Wilson
Spokesperson for the National Parent Teacher Association

<https://www.washingtonpost.com/science/2019/03/08/springing-forward-daylight-saving-time-is-obsolete-confusing-unhealthy-critics-say/>

 **SAVE STANDARD TIME**



SAVE STANDARD TIME

SaveStandardTime.com • Twitter.com/SaveStandard • info@SaveStandardTime.com • PO Box 40238, San Francisco CA 94140

Endorsements of Permanent Standard Time as the Better Year-Round Clock

The following parties reject permanent Daylight Saving Time and endorse permanent Standard Time as the better year-round clock. These are not implied to be endorsements of the Save Standard Time entity.

Organizations (non-comprehensive list)

National PTA	National Education Association
National Safety Council	American Academy of Sleep Medicine
American College of Chest Physicians	American Federation of Teachers
National School Boards Association	American College of Occupational & Environmental Medicine
B-Society	Start School Later
American Academy of Dental Sleep Medicine	Rabbinical Council of America
European Sleep Research Society	Society for Research on Biological Rhythms
Agudath Israel of America	Florida PTA
Society of Anesthesia & Sleep Medicine	World Sleep Society
German Teachers' Association	European Biological Rhythms Society
French Society for Sleep Research & Medicine	Society of Behavioral Sleep Medicine
National Commission for the Rationalization of Spanish Hours	American Academy of Cardiovascular Sleep Medicine
California Islamic University	Agudath Israel of Florida
Society for Light Treatment & Biological Rhythms	Francophone Chronobiology Society
Rabbinical Council of California	Association of Canadian Ergonomists
Agudath Israel of California	Good Light Group
Northwest Noggin Neuroscience	Agudath Israel of Chicago
California Sleep Society	Daylight Academy
Michigan Academy of Sleep Medicine	Kentucky Sleep Society
Ohio Bicycle Federation	Maryland Sleep Society
Wisconsin Sleep Society	Australasian Chronobiology Society
Canadian Society for Chronobiology	Cuyahoga Astronomical Association
Southern Sleep Society	Adath Israel San Francisco
Normal Time All the Time	Tennessee Sleep Society
German Society for Time Policy	Curtis Clock Lab
Missouri Sleep Society	Capitol Neurology
Solaris Fatigue Management	Stephens Memorial Observatory
Sleep Medicine Association Netherlands	Dutch Society for Sleep-Wake Research
Chronobiology Lab Groningen	Dakotas Sleep Society
Better Times Platform	Abolish Time Change!
Barcelona Time Use Initiative for a Healthy Society	

Individuals (non-comprehensive list)

Raúl Aguilar-Roblero MD PhD, Laboratory on Circadian Rhythmicity, Institute of Cellular Physiology, Mexico
Konstantin V Danilenko MD PhD, Institute of Physiology & Basic Medicine, Novosibirsk, Russia
Elizabeth B Klerman MD PhD, Associate Professor, Harvard Medical School, Boston, Massachusetts
Michael T Lam MD PhD, San Diego, California
Michael McCarthy MD PhD, Center for Circadian Biology, University of California, San Diego
Thomas E Nordahl MD PhD, Professor Emeritus, University of California, Davis
David K Welsh MD PhD, Professor Emeritus, University of California, San Diego
Amir Zarrinpar MD PhD, Assistant Professor, San Diego, California
Salman Ahsan PhD, San Jose, California
Shimon Amir PhD, Professor, Concordia University, Montreal, Quebec
Sonia Ancoli Israel PhD, Professor Emeritus, University of California, San Diego

Michael Antle PhD, Professor, Hotchkiss Brain Institute & University of Calgary, Alberta
 Susanna Barry PhD, College Mental Health Counselor & Sleep Coach, Cambridge, Massachusetts
 William Bechtel PhD, Distinguished Professor, University of California, San Diego
 Mikhaïl Borisenkov PhD, Institute of Physiology, Komi Science Centre, Russian Academy of Sciences
 Joseph Boyd PhD, Research Scientist, MilliporeSigma, Temecula, California
 Hugo Calligaro PhD, San Diego, California
 Oscar Castanon-Cervantes PhD, Assistant Professor, Morehouse School of Medicine, Atlanta, Georgia
 Joanna C Chiu PhD, Vice Chair, Department of Entomology & Nematology, University of California, Davis
 Scott Cookson PhD, Quantitative BioSciences, San Diego, California
 Jason DeBruyne, PhD, Associate Professor, Morehouse School of Medicine, Atlanta, Georgia
 Grant Denn PhD, Physics Department Chair, Metropolitan State University of Denver, Colorado
 Heinz Freisling MSc PhD, Epidemiologist, International Agency for Research on Cancer, Lyon, France
 Frederic Gachon PhD, Group Leader, Physiology of Circadian Rhythms, Institute for Molecular Bioscience
 Susan S Golden PhD, Director, Center for Circadian Biology, University of California, San Diego
 Marijke CM Gordijn MS PhD, Chrono@Work, University of Groningen, Netherlands
 Bill Griesar PhD, Northwest Noggin Neuroscience Outreach Group, Portland, Oregon
 Liz Harrison PhD, Center for Circadian Biology, University of California, San Diego
 Dietrich Henckel PhD, Professor, Technical University of Berlin, Germany
 Erik Herzog PhD, Professor of Biology, Washington University, St Louis, Missouri
 Myriam Juda PhD, Researcher, Simon Fraser University, Vancouver, British Columbia
 Achim Kramer PhD, Professor of Chronobiology, Charité – Universitätsmedizin Berlin, Germany
 Camilla Kring PhD, Speaker, Author, & Entrepreneur, Copenhagen, Denmark
 Katja Lamia PhD, Associate Professor of Molecular Medicine, Center for Circadian Biology, UC San Diego
 Andy LiWang PhD, University of California, Merced
 Travis Longcore PhD, Institute of the Environment & Sustainability, University of California, Los Angeles
 Emily Manoogian PhD, Postdoctoral Fellow, San Diego, California
 Peter Mansbach PhD, Bethesda, Maryland
 Erik Maronde PhD, Scientist, Frankfurt, Germany
 Girish Melkani MS PhD, Associated Research Professor, San Diego, California
 Martha Merrow PhD, Professor of Chronobiology, Ludwig Maximilian University of Munich, Germany
 Matt Metzgar PhD, Clinical Professor of Economics, University of North Carolina, Charlotte
 Ralph Mistlberger PhD, Professor, Simon Fraser University, Vancouver, British Columbia
 João Nunes PhD, Biochemistry Researcher, Dresden, Germany
 Marie Pariollaud PhD, Postdoctoral Associate, Scripps Research, La Jolla, California
 Ketema Paul, PhD, University of California, Los Angeles
 Linda Petzold PhD, Professor, University of California, Santa Barbara
 Frank Powell PhD, Professor of Medicine, University of California, San Diego
 Kendall Satterfield PhD, San Diego, California
 Dorothy D Sears PhD, San Diego, California
 Benjamin Smarr PhD, Professor of Bioengineering & Data Science, University of California, San Diego
 Andrea Smit PhD, Researcher, Simon Fraser University, Vancouver, British Columbia
 Barbara Sorg PhD, Legacy Research Institute, Portland, Oregon
 Andrew Steele PhD, Associate Professor of Biological Sciences, California State Polytechnic University
 Jennifer Thomas PhD, Professor, San Diego, California
 Gianluca Tosini PhD, Chief Scientific Research Officer, Morehouse School of Medicine, Atlanta, Georgia
 Roger Tseng PhD, Biological Scientist, USDA, Ames, Iowa
 Judy Village PhD CCCPE, President, Association of Canadian Ergonomists, British Columbia
 Daniel S Whittaker PhD, Los Angeles, California
 Anna Wirz-Justice PhD, Professor Emeritus, Centre for Chronobiology, University of Basel, Switzerland
 Irving Zucker PhD, University of California, Berkeley
 Mariah Baughn MD, San Diego, California
 Richard E Cytowic MD, Washington, DC
 Mona Ezzat MD, San Diego, California
 John F Gottlieb MD, Clinical Assistant Professor of Psychiatry & Behavioral Sciences, Chicago, Illinois
 Royan Kamyar MD, Physician, La Mesa, California
 Jack Kruse DMD MD, Neurosurgeon, New Orleans, Louisiana
 Beth Malow MD MS, Medical Doctor & Researcher, Brentwood, Tennessee
 Tessa Sugarbaker MD MFT, San Francisco, California
 Nathaniel F Watson MD MSc, Bainbridge Island, Washington
 Dr Archana G Chavan, University of California, Merced
 Dr Chelsea Gustafson, Assistant Professor, Portland, Oregon
 Dr Paul Kelley, Milton Keynes, United Kingdom
 Dr Irving Lebovics, Los Angeles, California
 Prof Stacey Harmer, University of California, Davis
 Betty C Jung MPH RN MCHES, New Haven, Connecticut
 Fabian Mohedano, President of Catalan Council for Vocational Training, Former Member of Parliament
 Prof Kurt Niel, Grieskirchen, Austria

HB 85 - PROPOSED AMENDMENT

2021 SESSION

21-0211
05/08

HOUSE BILL **85**

AN ACT relative to using permanent Eastern Standard Time in New Hampshire.

SPONSORS: Rep. Yokela, Rock. 33; Rep. Yakubovich, Merr. 24; Rep. A. Lekas, Hills. 37; Rep. Schultz, Merr. 18; Rep. Hill, Merr. 3

COMMITTEE: Executive Departments and Administration

ANALYSIS

This bill provides that New Hampshire will use Eastern Standard Time throughout the calendar year if Massachusetts and Maine also move to permanent Eastern Standard Time.

Explanation: Matter added to current law appears in ***bold italics***.

Matter removed from current law appears ~~[in brackets and struck through.]~~

Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

21-0211
05/08

STATE OF NEW HAMPSHIRE

In the Year of Our Lord Two Thousand Twenty One

AN ACT relative to using Atlantic Standard Time in New Hampshire.

Be it Enacted by the Senate and House of Representatives in General Court convened:

1 Standard Time; Change to permanent Eastern Standard Time. Amend RSA 21:36 to read as follows: 21:36 Standard Time. The standard time within the state, except as hereinafter provided, shall be based on the mean astronomical time of the seventy-fifth degree of longitude west from Greenwich, known and designated by the federal statute as "Eastern Standard Time." ~~[At 2 o'clock ante meridian of the second Sunday in March of each year, the standard time in this state shall be advanced one hour, at 2 o'clock ante meridian of the first Sunday in November of each year, the standard time in this state shall, by the retarding of one hour, be made to coincide with the astronomical time hereinbefore described as Eastern Standard Time, so that between the second Sunday in March at 2 o'clock ante meridian and the first Sunday in November at 2 o'clock ante meridian in each year the standard time in this state shall be one hour in advance of the United States Standard Time]~~ In all laws, statutes, orders, decrees, rules, and regulations relating to the time of performance by any officer or department of this state, or of any county, city, town, or district thereof, or relating to the time in which any rights accrue or determine, or within which any act shall or shall not be performed by any person subject to the jurisdiction of this state, or of any county, city, town, or district thereof, and in

all contracts or choses in action made or to be performed in this state, it shall be understood and intended that the time shall be as set forth in this section.

2 Application to the United States Department of Transportation. Within 180 days of the adoption of similar legislation by the states of Maine and Massachusetts, or on the date specified for similar action by either the state of Maine or Massachusetts, whichever is earlier, the governor shall petition the United States Secretary of Transportation to move the state of New Hampshire to permanent Eastern Standard Time.

3 Contingency. Section 1 of this act shall take effect on the first December 1 after section 2 takes effect or the effective date specified by similar action by either the state of Maine or Massachusetts, whichever is earlier. Section 2 of this act shall take effect on the date that the states of Massachusetts and Maine enact similar legislation moving from the Eastern Time Zone to the Atlantic Time Zone. If Massachusetts and Maine do not adopt such legislation, sections 1 and 2 of this act shall not take effect.

4 Effective Date.

I. Sections 1 and 2 of this act shall take effect as provided in section 3 of this act.

II. The remainder of this act shall take effect 60 days after its passage.



Report of the Special Commission on the Commonwealth's Time Zone

November 1, 2017

Contents

Executive Summary	3
Purpose of the Commission	6
Structure of the Commission	6
Background	8
Findings.....	12
Economic Development: Commerce and Trade.....	12
Labor and Workforce.....	14
Public Health.....	15
Energy	16
Crime and Criminal Justice.....	18
Transportation	19
Broadcasting	20
Education and School Start-Times	21
Recommendations	25
Regional Action	25
Later School Start-Times	26
Public Awareness.....	26
APPENDIX A: Individuals Invited to Testify	28
APPENDIX B: Meeting Minutes.....	29

Executive Summary

Purpose of the Special Commission

In the summer of 2016, the Legislature passed *An Act relative to job creation and workforce development*. Section 136 of the bill established a special commission with the purpose of conducting “a comprehensive study relative to the practical, economic, fiscal and health related impacts of the commonwealth remaining on Eastern Daylight Time, 4 hours behind coordinated universal time, also known as Atlantic Standard Time, throughout the calendar year.”

Structure of the Special Commission

The statute that established the special commission required that the commission consist of 11 members appointed by the governor, the speaker of the House, the president of the Senate, the House minority leader, and the Senate minority leader.

Background

Twice a year, as Massachusetts residents are reminded to set their clocks forward or back an hour, media outlets inundate the public with anecdotes and opinions about this practice. Until the formation of this Commission, however, the Commonwealth had not tasked any group with researching or analyzing the wisdom of maintaining the status quo of switching back-and-forth between daylight saving time (“DST”) and standard time.

The tradition of moving the clocks forward one hour and back one hour annually may appear longstanding, but DST was only introduced in the United States during World War I, and then federally abandoned (although intermittently used by some states) until 1966 when Congress passed the Uniform Time Act, which established DST as running from the last Sunday of April until the last Sunday in October. DST dates have been amended several times since 1966. The current dates for “springing forward” and “falling back” – the second Sunday in March and the first Sunday in November – have been in place since 2007.

One of 17 states in the Eastern Time Zone, Massachusetts currently follows Eastern Daylight Time (“EDT,” coordinated universal time minus 4 hours) when observing DST, and Eastern Standard Time (“EST,” coordinated universal time minus five hours) when observing standard time. Although DST is observed in 48 states (Hawaii and Arizona – with the exception of the Navajo Nation – do not participate), a surprising lack of uniformity exists around the world. DST is employed in only about 70 countries. Most of Africa and Asia do not observe DST, and South America is split, with many of its northern countries not observing DST, while nations like Paraguay and southern Brazil following DST. Even countries that observe DST have inconsistent start and end dates. For example, Canada follows the U.S.’s DST dates, Europe observes DST but switches its clocks a few weeks after the U.S., and parts of Australia that observe DST do so during the brighter months of the Australian year, October through April.

No mechanism exists through which Massachusetts could adopt year-round DST, as federal law only allows states to opt out of DST. But the state could effectively achieve that goal by moving

from the Eastern Time Zone to the Atlantic Time Zone and then opting out of DST. Several states are considering bills that would move them to year-round DST, including four of the five other New England states. If Massachusetts does move to the Atlantic Time Zone and opt out of DST, then the Commonwealth would be an hour ahead for roughly four months each year.

Findings

This Commission researched and evaluated the impact of DST to understand whether the inconvenience of changing clocks twice per year is fulfilling goals in various policy areas from energy to crime to public health. Following this analysis, the Commission considered whether Massachusetts should move to the Atlantic Time Zone (effectively observing year-round DST).

The Commission utilized a data-driven approach in reaching its findings and recommendations, relying on experts, academic papers, facts, and data. The Commission finds as follows:

- *Economic Development: Commerce and Trade.* The U.S. has a history of adjusting the clocks or the calendar to increase retail sales, and year-round DST has the potential to create economic growth in Massachusetts as people tend to shop, dine out, and engage in commercial activities more in after-work daylight. Year-round DST could also increase the state's competitiveness in attracting and retaining a talented workforce by mitigating the negative effects of Massachusetts' dark winters and improving quality-of-life.
- *Labor and Workforce.* Eliminating the spring transition to DST could increase productivity and cut down on both the number and severity of on-the-job injuries, which would lead to lower costs for businesses (e.g. more productivity, lower rates for workers' compensation insurance, and less need for hiring and training replacement workers).
- *Public Health.* Adopting year-round DST could improve public health in the Commonwealth by eliminating the annual spring transition to DST—and the corresponding increase in traffic fatalities, workplace injuries, and heart attacks—and also by providing residents with additional evening daylight during the winter, which would lead to increased physical activity among residents.
- *Energy.* Year-round DST has the potential to produce energy savings for Massachusetts residents. Due to the timing of those savings and New England's current energy portfolio, year-round DST could lead to meaningful reductions in both future energy costs and greenhouse gas emissions.
- *Crime and Criminal Justice.* Research suggests that year-round DST would reduce street crime, produce substantial social cost savings, and also reduce inequities within the criminal justice system.
- *Transportation.* Year-round DST could have a mixed impact on transportation, and create additional business complexity in moving goods and services. While year-round DST would lead to fewer traffic fatalities, unilateral action by Massachusetts would complicate interstate travel.

- *Broadcasting.* Year-round DST may have some negative effects on broadcasters and scheduled television programming unless other states also adopt year-round DST.
- *Education and School Start-Times.* With current school schedules remaining in place, year-round DST could pose a safety risk during the winter to children waiting for the school bus in the dark and to adolescents driving in the early morning. Those risks could be mitigated by delaying school start-times, which is a cost-effective way to alleviate safety concerns as well as improve students' physical and mental health, attendance and graduation rates, tardiness and dropout rates, and grades and standardized test scores.

Recommendations

Based on its research and findings, and after weighing the costs and benefits associated with the observance of time in Massachusetts, the Commission believes that, under certain circumstances, the Commonwealth could make a data-driven case for moving to the Atlantic Time Zone year-round (effectively observing year-round DST). Although there are appreciable costs associated with making this change, on balance the Commission finds that doing so could have positive benefits that largely stem from the absence of a spring transition to DST and the additional hour of winter evening daylight.

However, the Commission does not recommend a simple switch to the Atlantic Time Zone, and cautions that several qualifiers should accompany future conversations or legislative proposals with respect to how Massachusetts observes time. The Commission offers the following blueprint of concerns for a thoughtful implementation of year-round DST, should Massachusetts ever decide to pursue this policy change:

- *Regional action.* Massachusetts should only move to year-round DST if a majority of other Northeast states – possibly including New York – also do so. To facilitate regional action, the Legislature and Governor should raise this issue with other Northeastern legislative and executive bodies, including the National Conference of State Legislatures, the Council of State Governments, Coalition of Northeast Governors, and gatherings of New England Governors and Eastern Canadian Premiers.
- *Later school start-times.* Any move to year-round DST should be accompanied by statewide standards for delaying school start-times to mitigate safety issues; improve student academic performance, health, and well-being; and add significantly to the other economic benefits related to year-round DST.
- *Public awareness.* The Commonwealth should not adopt year-round DST unless it simultaneously commits funding to educate the public about the implications of the change. Even if Massachusetts does not adopt year-round DST, public awareness initiatives about transitions to and from DST would still be beneficial. For instance, public health announcements preceding the spring transition to DST would help residents prepare for the sleep loss caused by the transition so that they could try to mitigate its negative consequences.

Purpose of the Commission

In the summer of 2016, the Legislature passed *An Act relative to job creation and workforce development*. Section 136 of Chapter 219 of the Acts of 2016 established that:

[T]here shall be a special commission to conduct a comprehensive study relative to the practical, economic, fiscal and health related impacts of the commonwealth remaining on eastern daylight time, 4 hours behind coordinated universal time, also known as Atlantic standard time, throughout the calendar year. The commission shall focus on the impact to local and regional economies, education, public health, transportation, energy consumption, commerce and trade if the time zone is altered.

To carry out its purpose, the Commission held several public meetings during which it received testimony from a variety of experts and stakeholders. Experts reported on a variety of subjects, including the history of times zones in the United States, economic and retail development, criminal activity, the region's energy system, transportation, broadcasting, public health, and school start-time/student performance impacts related to daylight and time zones.

For a complete list of meeting participants, subject matters, and testimony offered, please refer to Appendices A and B of this report.

Structure of the Commission

The statute that established the Commission also delineated its structure and required that the Commission be made up of eleven members appointed as follows:

The commission shall be comprised of the following members: 3 members to be appointed by the governor, 1 of whom shall be a member of the executive office of health and human services and 1 of whom shall be a member of the executive office of education; 3 members to be appointed by the president of the senate, 1 of whom shall have expertise in economic development and 1 of whom shall have expertise in energy; 1 member to be appointed by the senate minority leader; 3 members to be appointed by the speaker of the house of representatives, 1 of whom shall have expertise in interstate commerce and 1 of whom shall have expertise in transportation; and 1 member to be appointed by the house minority leader.

In accordance with the statutory guidelines, the members of the Commission are:

Senate president appointments:

Senator Eileen Donoghue, Chair
First Middlesex District

Mr. Peter Shattuck (replaced by Ms. Amy Boyd in September 2017)
Acadia Center

Mr. Thomas Emswiler
Public health advocate

Speaker of the House appointments:

Representative Daniel Cahill
Tenth Essex District

Representative Michael Finn
Sixth Hampden District

Dr. Judith Owens
Director of the Center for Pediatric Sleep Disorders, Boston Children's Hospital

Governor appointments:

Mr. Tim Miley (replaced by Ms. Jennifer Barrelle in August 2017)
Department of Public Health

Mr. Robert LePage
Assistant Secretary for Career Education, Executive Office of Education

Mr. John Warren
General Manager of the Sports Licensed Division, Reebok International, LTD

Senate minority leader appointment:

Dr. Yvonne Spicer
Vice President for Advocacy & Educational Partnerships, National Center for Technological Literacy

House minority leader appointment:

Representative Paul Frost
Seventh Worcester District

Background

DST began during World War I when Germany moved its clocks back to reduce electricity usage and make more coal available for other uses.¹ The United States followed suit, passing the Standard Time Act of 1918, which established the four time zones still found across the continental United States.² The national observation of DST ceased after the war, but many states, counties, and even individual municipalities continued the practice, creating a confusing patchwork of DST observance across the country.³

The lack of a standardized approach to DST complicated commerce, particularly in the transportation and broadcasting industries, which prompted Congress to act.⁴ The Uniform Time Act of 1966 created a system in which every state observed DST beginning on the last Sunday in April and ending on the last Sunday in October, unless an entire state opted out of DST.⁵ The Act was later amended so that a state straddling two time zones could exempt a portion of the state from DST. The Uniform Time Act ended the country's slapdash geographical calendar of DST observances.⁶

During the oil embargo of 1973, Congress experimented with year-round DST to conserve fuel.⁷ The experiment was intended to last from January 6, 1974, to April 27, 1975, although the country returned to an abbreviated period of standard time after parents raised concerns about children walking to school in the dark.⁸ In 1975, the U.S. Department of Transportation evaluated the experiment and determined that extending the DST period from six to eight months could have modest benefits "in the areas of energy conservation, overall traffic safety, and reduced violent crime."⁹

In 1986, Congress advanced the start date of DST by three weeks to the first Sunday in April in another attempt to conserve energy.¹⁰ Then, in 2007, following the passage of the Energy Policy Act of 2005, the start date of DST moved forward an additional three weeks to the second Sunday in March, and the end date moved back one week to the first Sunday in November.¹¹

¹ Matthew J. Kochten & Laura E. Grant, *Does Daylight Saving Time Save Energy? Evidence from a Natural Experiment in Indiana*, 93 Review of Econ. and Stat. 1172, 1172 (2011).

² Daniel S. Hamermesh et. al, *Cues for Timing and Coordination: Latitude, Letterman, and Longitude*, 26 J. Lab. Econ. 223, 227 (2008).

³ Jody Brumage, *The Uniform Time Act of 1966*, Robert C. Byrd Center for Congr. History and Educ. (Mar. 15, 2009), www.byrdcenter.org/byrd-center-blog/the-uniform-time-act-of-1966.

⁴ *Id.*

⁵ Beth Cook, Cong. Research Serv., R44411, *Daylight Saving Time* (2016).

⁶ *Id.*

⁷ *Id.*

⁸ *Id.*

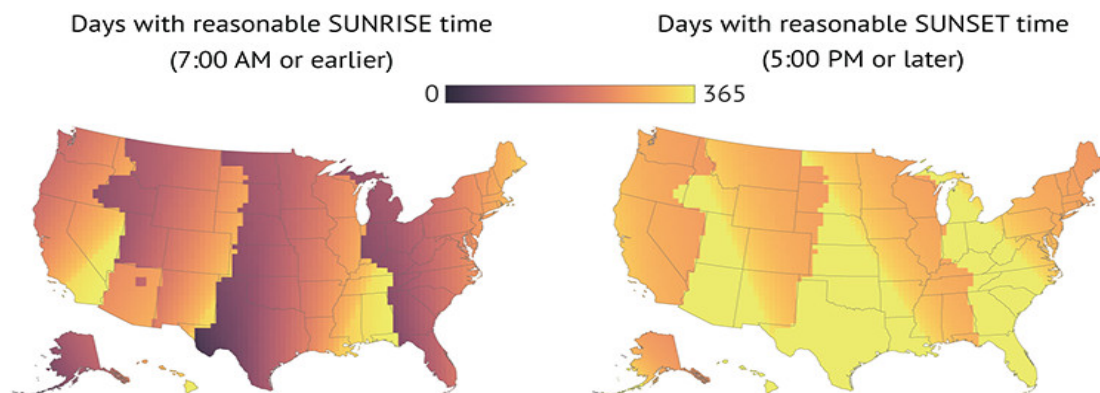
⁹ Office of the Assistant Sec'y for Policy, Plans, and Int'l Affairs, U.S. Dep't of Transp., *Exec. Summary of the Final Report on the Operation and Effects of Daylight Saving Time* (1975).

¹⁰ Kochten, *supra* note 1.

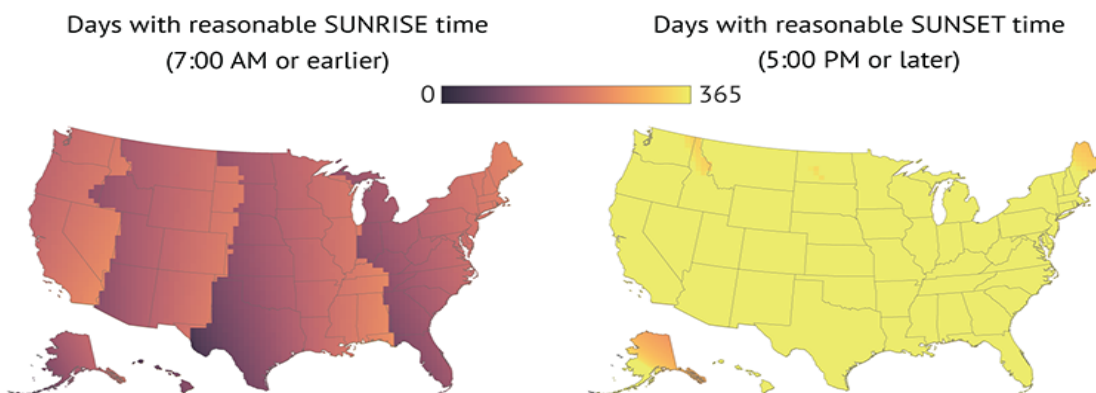
¹¹ *Id.*

Most U.S. states and territories observe DST, with the exceptions of American Samoa, Arizona (except the Navajo Nation, which does observe DST), Guam, Hawaii, the Northern Mariana Islands, Puerto Rico, and the Virgin Islands.¹² Thus, after several decades and two separate extensions, the United States ended up with eight months of DST, the system that remains in place today.¹³

Daylight Saving Time as currently observed



If Daylight Saving Time were always in effect



¹² Cook, *supra* note 5.

¹³ Brian Resnick, *The awfulness of daylight saving time, mapped*, Vox (Mar. 12, 2016, 9:15 am), www.vox.com/science-and-health/2015/11/19/9762276/daylight-saving-time-bad-mapped.

Although DST is observed in 48 states, a surprising lack of uniformity exists globally. DST is employed in only about 70 countries.¹⁴ Most of Africa and Asia do not observe DST,¹⁵ and South America is split, with many of its northern countries not observing DST, while places like Paraguay and southern Brazil follow DST.¹⁶ Even those countries that do observe DST have different start and end dates. For example, Canada follows the United States, Europe observes DST but switches its clocks a few weeks after the United States, and the parts of Australia that observe DST do so from October through April.¹⁷

No mechanism exists through which Massachusetts could adopt year-round DST, as federal law only allows states to opt out of DST,¹⁸ but the Commonwealth could effectively achieve that goal by moving from the Eastern Time Zone to the Atlantic Time Zone and then opting out of DST.¹⁹ A geographic area can change its time zone through an act of Congress, or through regulations issued by the U.S. Secretary of Transportation.²⁰ Under the regulatory route—the only approach used in recent decades—a state government petitions for a change in time zone, and the Secretary of Transportation evaluates the petition based on the change’s impact on commerce.²¹

Several other states are considering bills that would move them to year-round DST, including four of the other five New England states.²² A bill that would have made such a change in Maine—but only if Massachusetts and New Hampshire also participated—passed both legislative chambers but was ultimately laid aside.²³ A similar bill passed New Hampshire’s House but was rejected by its Senate.²⁴ Bills establishing year-round DST were also filed in the Connecticut and Rhode Island legislatures, and in the legislatures of Illinois, Michigan, Mississippi, New Mexico, and Wyoming.²⁵

¹⁴ Meeting of the Special Comm’n on the Commonwealth’s Time Zone [hereinafter Comm’n], statement of Dr. David Prerau (Apr. 12, 2017).

¹⁵ *Worldwide Daylight Saving Time*, Web Exhibits: Daylight Saving Time (2008), www.webexhibits.org/daylightsaving/g.html (accessed 9/12/17).

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ Cook, *supra* note 5.

¹⁹ Matt O’Brien, *Could New England Secede from Eastern Standard Time?*, Bos. Globe (Mar. 11, 2016), www.bostonglobe.com/metro/2016/03/11/will-new-england-secede-from-eastern-standard-time/4T9tNuLYXX3rz3SKWMpkZI/story.html.

²⁰ U.S. Dep’t of Transp., Procedure for Moving an Area from One Time Zone to Another (2013).

²¹ *Id.*

²² See Time Zone Report: Following Daylight Saving Time legislation in the U.S., timezonereport.com/ [hereinafter Time Zone Report].

²³ Joe Lawlor, *Maine legislators set aside bill to end twice-a-year clock changes*, Press Herald (Jun. 12, 2017), www.pressherald.com/2017/06/12/atlantic-standard-time-zone-bill-all-but-dead-in-legislature/.

²⁴ David Brooks, *Senate votes down push to switch N.H.’s time zone*, Concord Monitor (May 11, 2017), www.concordmonitor.com/time-zone-change-atlantic-9808198.

²⁵ Time Zone Report *supra* note 22.

If Massachusetts does move to the Atlantic Time Zone and opts out of DST, then the Commonwealth would be an hour ahead of the rest of the East Coast for roughly four months each year.²⁶

The following table breaks down the periods of the year when Massachusetts would be in or out of sync with the rest of the Eastern Time Zone:

	Massachusetts	Rest of Eastern Time Zone	Difference
Second Sunday in March until first Sunday in November (34 weeks, roughly 2/3 of the year)	Coordinated Universal Time minus four hours	Coordinated Universal Time minus four hours	No difference
First Sunday in November until second Sunday in March (18 weeks, roughly 1/3 of the year)	Coordinated Universal Time minus four hours	Coordinated Universal Time minus five hours	Massachusetts one hour ahead

²⁶ *Supra* note 14, statement of Dr. David Prerau (Apr. 12, 2017).

Findings

Twice a year, as Massachusetts residents are reminded to set their clocks forward or back an hour, media outlets inundate the public with anecdotes and opinions that usually bemoan (and occasionally celebrate) this ritual switching. Until the formation of this Commission, however, the Commonwealth had not requested any group to analyze the wisdom of maintaining the status quo and switching back-and-forth between EDT and EST.

This Commission researched and evaluated the impact of time zones and DST in terms of energy, crime, and public health to help to determine the advisability of Massachusetts moving to the Atlantic Time Zone (effectively observing year-round DST). The Commission utilized a data-driven approach in determining its findings and recommendations, and relied on experts, academic papers, and data to evaluate the merits of questions about time zones. The Commission reached the following findings:

Economic Development: Commerce and Trade

The United States has a history of adjusting the clocks or the calendar to increase retail sales.²⁷ For example, Thanksgiving has been moved to an earlier date to lengthen the shopping season leading up to Christmas,²⁸ and the 2007 extension of DST was at least partially motivated by a desire to increase evening retail sales.²⁹ Year-round DST represents another opportunity to fuel consumer spending.

Jon Hurst, president of the Retailers Association of Massachusetts, surveyed his organization's members about DST in March 2017 and shared the results with the Commission. A majority of the responding retailers did not believe that Massachusetts should continue the status quo and switch between standard time and DST, and while no clear consensus existed about the choice that Massachusetts should make, a plurality of respondents indicated that Massachusetts should adopt year-round DST.³⁰ Mr. Hurst emphasized that New England adopting year-round DST as a region would be preferable to Massachusetts acting alone.³¹

Many of the retailers surveyed by Retailers Association of Massachusetts cited the positive impact of additional evening daylight on consumer spending as the reason for supporting year-round DST.³² A 2016 study conducted by JPMorgan Chase & Co. compared consumer spending in Los Angeles, where DST is observed, and Phoenix, where it is not, during the 30 days before

²⁷ Comm'n *supra* note 14, statement of Mr. Jon Hurst (Mar. 15, 2017).

²⁸ Lily Rothman, *FDR Moved Thanksgiving to Give People More Time to Shop*, TIME (Nov. 28, 2014), time.com/3603622/fdr-moved-thanksgiving/.

²⁹ Lucas Powers, *Daylight Saving Time 2016: How Big Business Benefits from More Sunshine*, CBC News (Mar. 12, 2016), www.cbc.ca/news/business/daylight-saving-business-energy-1.3485281.

³⁰ Comm'n *supra* note 14, statement of Mr. Jon Hurst (Mar. 15, 2017).

³¹ *Id.*

³² *Id.*

and after DST started and ended.³³ The study found that relative to consumer spending in Phoenix, consumer spending in Los Angeles increased by 0.9 percent at the start of DST and decreased by 3.5 percent at the end of DST.³⁴

Several Commissioners raised the question of whether being temporally out of sync with East Coast markets like New York City would increase the costs of doing interstate business, particularly in financial services. Data show that some people in jurisdictions that do not observe DST end up changing their work schedules to stay in sync with business partners in nearby states, which suggests that interstate synchronization of schedules has economic value.³⁵

Another Commissioner raised the prospect of year-round DST giving the Commonwealth's businesses a competitive advantage in terms of employee recruitment and retention. In large sectors like financial services and technology, Massachusetts businesses compete for talent with New York City and Silicon Valley, where the earliest sunsets of the year occur at 4:28 p.m. and 4:50 p.m., respectively.³⁶ In Boston, the earliest sunset of the year currently occurs at 4:11 p.m.³⁷ Year-round DST would push back the earliest sunset to 5:11 p.m., giving Massachusetts a small, but potentially meaningful, competitive advantage.³⁸

A 2003 report on Massachusetts' retention of college graduates—commissioned by The Boston Foundation and the Greater Boston Chamber of Commerce—identified Greater Boston's climate as one of students' main frustrations with the region.³⁹ The report also found that students seeking relief from Greater Boston's long, dark winters often relocated to the San Francisco metropolitan area after college.⁴⁰ Massachusetts cannot rectify this problem by changing its weather or the length of its seasons, but might make its winters more palatable to college graduates by making evenings less dark.

Although some questions about coordination with East Coast markets remain unanswered, the Commission found that year-round DST would positively impact consumer spending, which in turn could help the Commonwealth attract and retain more talented workers.

³³ See Diana Farrell et. al, *Shedding Light on Daylight Saving Time*, JPMorgan Chase Inst. (Nov. 2016), www.jpmorganchase.com/corporate/institute/document/jpmc-institute-daylight-savings-report.pdf.

³⁴ *Id.* at 2.

³⁵ Hammermesh *supra* note 2, at 244-245.

³⁶ Tom Emswiler, *Why Mass. should defect from its time zone*, Bos. Globe (Oct. 4, 2014), www.bostonglobe.com/ideas/2014/10/04/why-massachusetts-should-defect-from-its-time-zone/zusFxWGPQmwv6bfUb1ssxH/story.html.

³⁷ *Id.*

³⁸ *Id.*

³⁹ The Bos. Consulting Grp., *Preventing a Brain Drain: Talent Retention in Greater Boston* 18 (2003), www.tbfg.org/~media/TBFOrg/Files/Reports/Preventing%20Brain%20Drain%20report.pdf.

⁴⁰ *Id.* at 10

Labor and Workforce

The spring transition to DST causes people to lose sleep, not only on Sunday—the day following the transition—but also during that work week. Using sleep data from the Bureau of Labor Statistics, University of Washington professor Christopher M. Barnes and University of Oregon professor David T. Wagner—who have done extensive research on sleep and fatigue issues in the workplace—found that workers lost an average of 40 minutes of sleep on the Monday following the spring transition.⁴¹ That lost sleep can profoundly affect both productivity and safety.⁴²

Professors Barnes and Wagner investigated the impact of lost sleep on workplace safety by analyzing 23 years of data from the Mine Safety and Health Administration.⁴³ Mines are useful workplaces to examine when considering the effect of transitioning to DST because mining work occurs largely underground; therefore, differences in sunlight do not skew the data.⁴⁴ The analysis showed a 5.7 percent increase in the number of injuries on days following the spring transition to DST and a 67.6 percent increase in the number of days lost due to injury, suggesting an increase in the severity of the injuries.⁴⁵

In addition to compromising workers' safety, the spring transition to DST compromises their productivity. Professors Barnes and Wagner collected Google search data from the Monday following the spring transition to DST and measured an increase in traffic to entertainment-related websites of between 3.1 and 6.4 percent, which suggested that workers were too tired to focus on their jobs.⁴⁶ A lab experiment also revealed that an hour of disturbed sleep led study participants to “cyberloaf” for, on average, 20 percent of the duration of an assigned task.⁴⁷

The Commission finds that eliminating the spring transition to DST would increase productivity and cut down on both the number and severity of on-the-job injuries, which would lead to lower costs for businesses (e.g. more productivity, lower rates for workers' compensation insurance, and less need for hiring and training replacement workers).

⁴¹ See Christopher M. Barnes and David T. Wagner, *Changing to Daylight Saving Time Cuts Into Sleep and Increases Workplace Injury*, 94 J. Applied Psychol. 1305 (2009).

⁴² *Id.*

⁴³ *Id.* at 1310.

⁴⁴ Comm'n *supra* note 14, statement of Mr. Christopher M. Barnes (Apr. 12, 2017).

⁴⁵ *Supra* note 41, at 1305, 1310-1311 (2009).

⁴⁶ Christopher M. Barnes et. al, *Lost Sleep and Cyberloafing: Evidence from the Laboratory and a Daylight Saving Time Quasi-Experiment*, 97 J. Applied Psychol. 1068, 1071 (2012).

⁴⁷ *Id.* at 1073.

Public Health

DST, as currently observed, has several impacts on public health. The spring transition itself has negative consequences, most of which result from lost sleep, while the additional evening daylight provided during DST improves public health by increasing physical activity among residents.⁴⁸ As previously stated, people lose a significant amount of sleep in the days following the spring transition to DST, which leads to an increase in traffic fatalities and an increase in both the frequency and severity of on-the-job injuries.

In addition to those risks, the spring transition to DST has another potentially fatal consequence: a higher incidence of acute myocardial infarction—also known as heart attack.⁴⁹ A study published in the *New England Journal of Medicine* in 2008 found that the incidence of heart attack significantly increased during the three weekdays following the spring transition, but significantly decreased for only one weekday following the fall transition.⁵⁰ The authors stated that “the adverse effect of sleep deprivation on cardiovascular health” was the “most plausible explanation” for their findings.⁵¹

The public health benefits of year-round DST do not just stem from the elimination of the spring transition. A study that followed more than 23,000 children before and after the clocks changed found that more evening daylight correlated with a small, but meaningful, increase in their physical activity levels.⁵² The impact occurred population wide, which is important, according to the authors, “because even small changes to the population mean can have important public health consequences.”⁵³ The authors also noted that the effect size of additional evening daylight compared favorably to the effect size of “intensive, individual-level interventions,” suggesting that daylight saving is a highly efficient means of promoting exercise.⁵⁴

The Commission finds that adopting year-round DST would improve public health in the Commonwealth by eliminating the annual spring transition to DST—with its corresponding increase in traffic fatalities, workplace injuries, and heart attacks—and also by providing residents with additional evening daylight during the winter, which would lead to increased physical activity among residents.

⁴⁸ Heindrik Wolff & Momoe Makino, Does Daylight Saving Time Burn Fat? Time Allocation with Continuous Activities 3 (2014), econ.washington.edu/sites/econ/files/old-site-uploads/2014/06/Economica-R-and-R-2014-Wolff-Makino.pdf.

⁴⁹ Barbara S. Taylor, M.D. & Scott M. Hammer, M.D., *Shifts to and from Daylight Saving Time and Incidence of Myocardial Infarction*, 359 New Eng. J. Med. 1966, 1966 (2008).

⁵⁰ *Id.*

⁵¹ *Id.*

⁵² Anne Goodman et. al, *Daylight saving time as a potential public health intervention: an observational study of evening daylight and objectively-measured physical activity among 23,000 children from 9 countries*, 11 Int’l J. Behav. Nutrition and Physical Activity 1, 7 (2014).

⁵³ *Id.*

⁵⁴ *Id.* at 1.

Energy

Most of the academic literature on DST and energy focuses on energy usage during the March-to-November DST period. While interesting, that information is not particularly relevant to the Commission, which is charged with investigating how DST would affect energy usage from early November to mid-March rather than how DST affects energy usage during the summer. There is, however, some information that sheds light on the impact that winter DST would have on energy consumption.

According to a presentation made by Commission member Peter Shattuck, a study conducted by the U.S. Department of Energy (DoE) following the 2007 extension of DST provides the energy usage data most relevant to the Commission.⁵⁵ This 2007 extension added three weeks of DST in the spring and one week in the fall, creating a natural experiment that can be exploited to measure how energy usage changes when DST encroaches deeper into winter.⁵⁶

The DoE study compared electricity consumption during those four weeks in 2006 and 2007. DoE found a 0.48 percent drop in electricity consumption nationally following the extension of DST and a 0.68 percent drop in New England.⁵⁷ In Massachusetts, electricity consumption increased by 1.2 percent in the morning during the spring, but decreased by 3.2 percent in the afternoon and evening.⁵⁸ During the fall, electricity consumption increased by one percent in the morning, but decreased by 2.8 percent in the afternoon and evening.⁵⁹

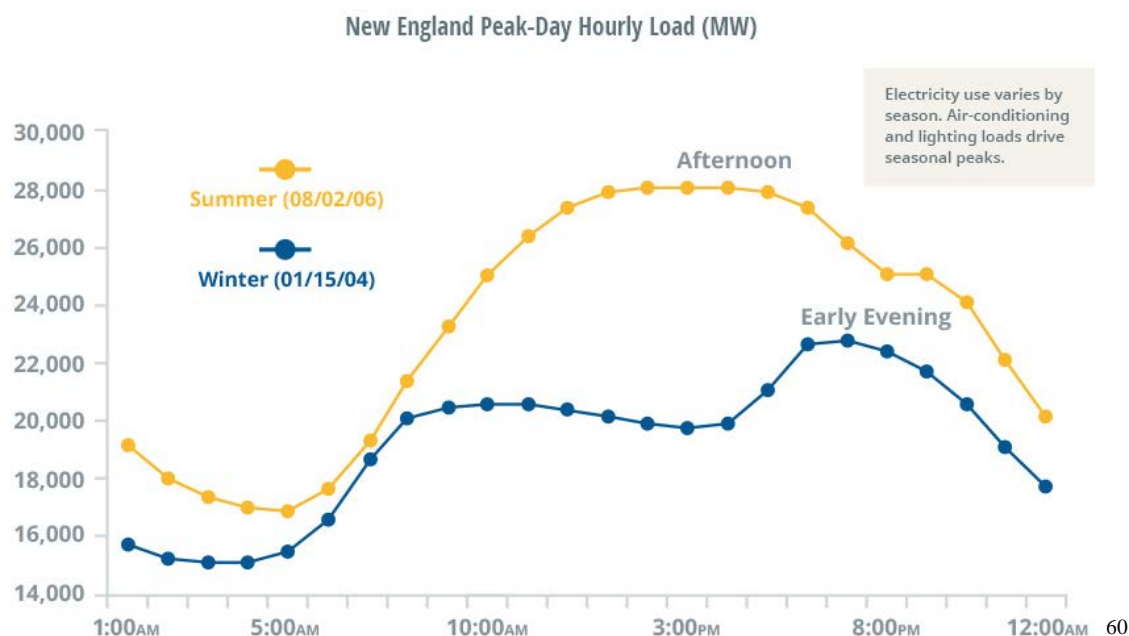
⁵⁵ See U.S. Dep't of Energy, Report to Cong.: Impact of Extended Daylight Saving Time on National Energy Consumption (2008).

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.*



Mr. Shattuck helped put those numbers in context for the Commission, explaining that in New England, peak demand for electricity occurs in the early evening during the winter. He added that peak winter demand poses a problem because the region has developed a heavy reliance on natural gas for electricity generation, and in the winter natural gas is used for heating.⁶¹ Residents have felt the impact of that heavy reliance in recent winters when natural gas was scarce and its price spiked, causing electricity bills to rise sharply.⁶²

Because afternoon and evening are the hours of peak winter electricity demand, Mr. Shattuck explained, even a small reduction in afternoon and evening electricity consumption can have significant benefits.⁶³ If the Commonwealth were having difficulty meeting demand for even a few hours each winter, then Massachusetts might be compelled to invest in costly new energy infrastructure.⁶⁴ Even one-half a percentage point reduction in peak demand could obviate the need for that new infrastructure, which would result in lower greenhouse gas emissions and lower costs for ratepayers.⁶⁵

The Commission finds that year-round DST has the potential to produce modest energy savings. The Commission also finds that due to the timing of those savings and New England's current energy portfolio, year-round DST could lead to meaningful reductions in both future energy costs and greenhouse gas emissions.

⁶⁰ ISO New Eng., 2015 Regional System Plan (2015).

⁶¹ *Id.*

⁶² Megan Woolhouse, *National Grid's Electric Rates Going up for Winter*, Bos. Globe (Sept. 15, 2015), www.bostonglobe.com/business/2015/09/15/national-grid-electric-rates-going-for-winter-but-not-much-last-year/s3nFnwz4on3IrXD8L4MRoO/story.html.

⁶³ Comm'n, *supra* note 22, statement of Mr. Peter Shattuck (Mar. 15, 2017).

⁶⁴ *Id.*

⁶⁵ *Id.*

Crime and Criminal Justice

Proponents of DST have long speculated that its observance reduces crime, which academic researchers have recently confirmed. University of Virginia professor Jennifer Doleac and Cornell University professor Nicholas Sanders, both of whom offered expert testimony to the Commission, used transitions to and from DST as a natural experiment to measure the impact that shifting daylight from the morning to the evening has on crime. They published their results in 2015.⁶⁶

The study found a seven percent decrease in robberies due to an additional hour of evening daylight, including a 27 percent reduction during evening commuting hours, with no corresponding increase in crime during morning commuting.⁶⁷ The study also found suggestive but not conclusive evidence of a decrease in the incidence of rape.⁶⁸ Commuting hours offer the most potential victims to would-be robbers, which might be why preventing those hours from occurring in darkness leads to such a significant reduction in crime.⁶⁹

Professors Doleac and Sanders estimated that the three-week extension of DST in the spring of 2007 generated \$59.2 million in national social cost savings due to a reduction in robberies.⁷⁰ If that reduction were consistent throughout the year, then year-round DST would generate \$1 billion in national social cost savings compared to year-round standard time.

The transition to DST also has several impacts on the criminal justice system. Researchers have demonstrated that people of color are more likely to be searched arbitrarily and arrested in the days following the transition.⁷¹ In addition, judges hand out longer sentences in the wake of the annual transition to DST.⁷² Unlike the effect of evening daylight on crime, which last through the duration of DST, these effects are limited to the days following the spring transition to DST.⁷³

Based on the strength of the academic research, the Commission finds that year-round DST could reduce street crime and produce significant social savings, and could also reduce criminal-justice inequities.

⁶⁶ See Jennifer L. Doleac and Nicholas J. Sanders, *Under the Cover of Darkness: How Ambient Light Influences Criminal Activity*, 97 The Review of Econ. and Stat. 1093 (2015).

⁶⁷ *Id.* at 1094.

⁶⁸ *Id.* at 1100.

⁶⁹ *Id.* at 1101.

⁷⁰ *Id.* at 1102.

⁷¹ Comm'n *supra* note 14, statement of Mr. David Wagner (Apr. 12, 2017).

⁷² Kyongmin Cho et. al, *Sleepy Punishers are Harsh Punishers: Daylight Saving Time and Legal Sentences*, 28 Psychol. Sci. 242, 245 (2016).

⁷³ *Id.*

Transportation

Moving Massachusetts' time zone out of sync with other eastern states from November to mid-March has the potential to cause confusion at the Commonwealth's airports. José C. Massó, director of policy at Massport, told the Commission that although airports use universal time to communicate with each other, they use local time to communicate with the public.⁷⁴ He warned that an hour time difference would likely confuse passengers traveling to or from destinations served by Logan International Airport including New York City, Washington, D.C., and Atlanta.⁷⁵

Mr. Massó informed the Commission that during the three weeks of the year when the United States observes DST but Europe does not, manageable logistical challenges for both passengers and airports result.⁷⁶ Ed Freni, Massport's director of aviation, testified that extra resources are needed to plan for the complexity of those three weeks, and additional staff is needed to assist passengers.⁷⁷ Year-round DST could cause airports located in the Commonwealth to incur those additional costs over a longer period and for more flights.⁷⁸

Regional action would help mitigate the negative impacts to airports caused by a change to year-round DST, according to Mr. Massó.⁷⁹ He would prefer that all the New England states and possibly New York act together to minimize the costs and confusion that would ensue if Massachusetts acted alone.⁸⁰

While having a clear impact on modes of transportation like air and rail that rely on carefully calibrated schedules, DST also impacts vehicular traffic. A study conducted by Austin C. Smith, an economist at the University of Colorado, found a 5.4 to 7.6 percent increase in fatal crashes during the six-day period following the beginning of DST.⁸¹ Mr. Smith estimated that over a decade, the spring transition caused 302 deaths and resulted in a social cost of \$2.75 billion.⁸²

Mr. Smith found that the fall transition to standard time had no aggregate impact on traffic fatalities.⁸³ The reallocation of light from the evening to the morning did lead to a corresponding reallocation of fatal crashes from the morning to the evening, but those changes balanced each other out.⁸⁴ Other researchers have reached different conclusions. Paul Fischbeck and David Gerard of Carnegie Mellon University found that brighter mornings and darker evenings led to a

⁷⁴ Comm'n *supra* note 14, statement of Mr. José C. Massó (Mar. 15, 2017).

⁷⁵ *Id.*

⁷⁶ *Id.*

⁷⁷ Comm'n *supra* note 14, statement of Mr. Ed Freni (Mar. 15, 2017).

⁷⁸ Comm'n *supra* note 14, statement of Mr. José C. Massó (Mar. 15, 2017).

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ Austin C. Smith, *Spring Forward at Your Own Risk: Daylight Saving Time and Fatal Vehicle Crashes*, 8 Am. Econ. J.: Applied Econ. 65, 79 (2016).

⁸² *Id.* at 89

⁸³ *Id.* at 68

⁸⁴ *Id.* at 80

net increase in pedestrian fatalities, with more lives lost in the evening than saved in the morning.⁸⁵ Their findings suggest that observing DST throughout the winter would save lives.⁸⁶

The Commission finds that year-round DST would have a mixed impact on transportation. While evidence suggests that year-round DST would lead to fewer traffic fatalities, unilateral action by Massachusetts would likely complicate travel air and train travel.

Broadcasting

Adopting year-round DST could prove problematic for Massachusetts broadcasters.⁸⁷ If Massachusetts adopted year-round DST on its own, national evening news programs would broadcast an hour later from early November to mid-March, as would the 8 p.m. to 11 p.m. slot for national programming.⁸⁸ Those changes could disrupt local news programs, which are the biggest sources of revenue for local broadcasters, according to Jim Smith, general counsel to the Massachusetts Broadcasters Association.⁸⁹ The fact that Central time zone audiences often have television shows broadcast an hour earlier, however, suggests that the logistical issues arising from the four-month shift may have manageable solutions.

Live television events would pose additional challenges to broadcasters.⁹⁰ As currently programmed, an event like the Oscars that ended after midnight this year would instead end after 1 a.m., which would likely diminish viewership.⁹¹ Primetime sports events like Sunday, Monday, and Thursday night football would begin broadcasting after 9 p.m. and conclude well after midnight. Broadcasters and producers might have to take into account the relative size and market power of Massachusetts when deciding when to air certain programs between November and March. Leagues and major events would not alter their schedules to accommodate Massachusetts alone, according to Mr. Smith, because the need to capture the West Coast market is greater than the need to capture the Massachusetts market.⁹²

Mr. Smith additionally informed the Commission that even if all six New England states observed year-round DST they would still be outliers, adding that there would likely be no changes in national live broadcast schedules unless New York or Pennsylvania joined New England in making the change.⁹³ He said that New England acting alone presents issues to

⁸⁵ David Gerard, *The Spring Time Change Saves Lives*, N.Y. Times: Room for Debate (Mar. 6, 2014), www.nytimes.com/roomfordebate/2014/03/06/daylight-saving-time-at-what-cost/the-spring-time-change-saves-lives?mcubz=0.

⁸⁶ *Id.*

⁸⁷ Comm'n *supra* note 14, statement of Mr. Jim Smith (Apr. 12, 2017)

⁸⁸ *Id.*

⁸⁹ *Id.*

⁹⁰ *Id.*

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

broadcasters, which is why the Massachusetts Broadcasters Association opposes a change to year-round DST.⁹⁴

Moving national television programming and live events to a later hour could also impact the sleep habits of some Massachusetts residents. The Commission discussed how the national programming slot, which ends at 11 p.m. in the Eastern and Pacific Time Zones and at 10 p.m. in the Central and Mountain Time Zones, has been exploited by researchers looking to measure the effect of television schedules on people's behavior. Researchers have found that the one-hour difference in schedules had a meaningful effect on when people went to bed in the evening and when they woke up and went to work in the morning.

People in the early zones (Central and Mountain) are 6.4 percentage points less likely to watch television between 11 p.m. and 11:15 p.m. than those in the later zones (Eastern and Pacific).⁹⁵ Those nighttime television habits lead to corresponding changes in morning habits. People in the early zones (who stopped watching television at an earlier hour) are 3.4 percentage points less likely to be asleep at 7 a.m. and 3.4 percentage points more likely to be at work at 8 a.m. than people in the later zones.⁹⁶ Based on that information, a Massachusetts move to year-round DST may alter the sleep schedules of residents.

The Commission finds that year-round DST could have some negative effect on broadcasters, unless other states adopted year-round DST. Additionally, the Commission finds that some residents would change their sleep habits due to later television schedules by either sleeping less or waking up later.

Education and School Start-Times

Year-round DST would shift one hour of daylight from the morning to evening from early November to mid-March, leading to darker mornings as children head to school, but lighter afternoons as children engage in end-of-school and after-school activities. Parents have long worried that darker mornings make traveling to school more dangerous, and both the available data and other factors such as puberty, sleep, and alertness suggest they might be correct.⁹⁷

Although the Commission has not learned of recent studies on the effects of daylight on the safety of schoolchildren's commute, in a 1976 report to Congress on the impacts of the nation's year-round DST experiment, the National Bureau of Standards ("NBS") found evidence of increased fatalities among school-aged children from January to April of 1974, when DST was in effect, compared with the same period (non-DST) in 1973.⁹⁸ However, NBS could not determine what part of the increase, if any, was due to DST rather than other factors. Further,

⁹⁴ *Id.*

⁹⁵ Hammermesh, *supra* note 2, at 233.

⁹⁶ *Id.*

⁹⁷ Cook, *supra* note 5; *see also* Judith A. Owens, MD, *School Start Times for Adolescents*, 134 *Pediatrics* 642, 642 (2014).

⁹⁸ Cook, *supra* note 5.

when these same data were analyzed on a month-by-month basis for March and April, no significant difference was found for fatalities among school-age children in the morning.⁹⁹

According to Commission member Dr. Judith Owens, dark winter mornings also might make high school students more prone to exacerbated seasonal affective disorder and increased car accidents.¹⁰⁰

One way to avoid the downsides of year-round DST for school-aged children would be to delay school start-times until after there is sufficient daylight for safe travel.¹⁰¹ Civil twilight, which occurs roughly half an hour before sunrise, is the moment when there is generally enough natural light to engage in outdoor activities, such as walking or driving to school.¹⁰²

The following table shows the range of civil twilight times in Massachusetts from November 2017 to March 2018 under both standard time and DST:

	Nov	Dec	Jan	Feb
Civil Twilight EST	5:53-6:21am	6:22-6:41am	6:29-6:42am	5:54-6:28am
Civil Twilight DST	6:53-7:21am	7:22-7:41am	7:29-7:42am	6:54-7:28am
Sunrise EST	6:23-6:52am	6:53-7:13am	6:59-7:13am	6:22-6:58am
Sunrise DST	7:23-7:52am	7:53-8:13am	7:59-8:13am	7:22-7:58am
<ul style="list-style-type: none"> • If school starts at 7-7:30am, en route will be in complete darkness (before civil twilight) for almost all of 4 months and before sunrise for all 4 months • If school starts at 7:30-8am, en route will be before civil twilight for 3 months and before sunrise for most of 4 months • If school starts at 8-8:30am, en route will be before civil twilight for 2 months and before sunrise for 2 months • If school starts at 8:30am or later, en route will be after civil twilight for all 4 months and after sunrise for most of 4 months <p>*assuming average commute time of 30 minutes</p>				

103

⁹⁹ *Id.*

¹⁰⁰ Comm'n, *supra* note 14, statement and presentation of Dr. Judith Owens (May 31, 2017).

¹⁰¹ *Id.*

¹⁰² *Id.*

¹⁰³ *Id.*

During the 2014-2015 academic year, the average start time for a Massachusetts middle or high school was 7:37 a.m., meaning that the average middle or high school would open in the dark for much of December and January under year-round DST.¹⁰⁴ However, most schools are not in session for a week or more during the darkest period in late December and early January. Pushing back start-times to 8 a.m. would mean that schools never open in the dark, even under year-round DST, while pushing start-times to 8:30 a.m. would mean that few students would even have to commute to school in the dark under year-round DST.

Delaying school start-times for middle and high school students would also be consistent with the health recommendations of the American Academy of Pediatrics¹⁰⁵ and the Massachusetts Medical Society.¹⁰⁶ Adolescents naturally fall asleep and wake up later, so delayed school start-times enable them to obtain an adequate amount of sleep.¹⁰⁷ For teenagers, receiving adequate sleep lowers stress and risk of obesity; improves executive functioning and mood; and reduces risk-taking behavior.¹⁰⁸ Adolescents who sleep for eight or more hours nightly are also less likely to be involved in physical altercations, smoke, drink alcohol, be sexually active, feel sad, and consider suicide.¹⁰⁹

In addition, later middle and high school start-times have led to higher attendance rates, lower tardiness and dropout rates, and improved grades and test scores in schools in Massachusetts and around the country.¹¹⁰ When Nauset Regional High School pushed first period back from 7:25 to 8:35 a.m. in 2012, the tardiness rate dropped by 35 percent, and the number of “D”s and “F”s fell by half.¹¹¹ After delaying its start from 7:25 to 7:55 a.m. in 2016, Hanover High School saw a 32 percent drop in “D”s and “F”s and a 10 percent jump in “A”s in first-period classes.¹¹²

According to a macroeconomic state-by-state analysis conducted by the RAND Corporation, a delay in school start-times to 8:30 a.m. nationwide correlates with an annual increase in the national economy of approximately \$9.3 billion, an increase in high school graduation rates of 13.3 percent, and an increase in college attendance of 9.6 percent.¹¹³ The stronger academic and professional performance for students reflected in these numbers, along with as a reduction in car crash rates among adolescent drivers, could lead to an estimated additional \$83 billion

¹⁰⁴ *Id.*

¹⁰⁵ Owens, *supra* note 91.

¹⁰⁶ See *Massachusetts Medical Society Physicians Adopt New Resolutions at Interim Meeting*, Mass. Med. Soc’y (Dec. 5, 2015), <http://www.massmed.org/News-and-Publications/MMS-News-Releases/Massachusetts-Medical-Society-Physicians-Adopt-New-Resolutions-at-Interim-Meeting/#.WbLms2eWyUm>.

¹⁰⁷ Owens, *supra* note 91, at 644.

¹⁰⁸ See Stacy Simera, MSSA & Mary Haymaker, JD, *Massachusetts School Start Time Legislation Parameters and FAQs*, Start Sch. Later, Mass. Chapter (2017).

¹⁰⁹ *Id.*

¹¹⁰ Owens, *supra* note 91, at 644.

¹¹¹ James Vaznis, *Students Find More Awareness with Later Starts*, Bos. Globe (Mar. 10, 2016), www.bostonglobe.com/metro/2016/03/09/students-see-benefits-from-later-school-start-times/OOb4vtHm4XZTBLm5X78V9L/story.html?event=event12.

¹¹² Comm’n, *supra* note 22, from presentation by Dr. Judith Owens (May 31, 2017).

¹¹³ See Hafner et. al, *Later School Start Times in the U.S.: An Economic Analysis*, The RAND Corp. (2017), www.rand.org/pubs/research_reports/RR2109.html.

contribution to the U.S. economy within the next decade.¹¹⁴ Effects from delayed school start-times could be felt within a year of making this shift.¹¹⁵ This report estimates that this kind of change could have a cost-benefit ratio *specifically in Massachusetts* such that the Commonwealth would, at minimum, break even after just two years, and would achieve a cost-benefit ratio of 4.5 after 10 years; meaning that for every dollar spent to make the start-time change, the *return would be more than four-fold the cost*, due to improved academic achievement and reduction in car crash rates.

The Commission finds that with current school schedules remaining in place, adopting year-round DST can pose a public safety risk to school-aged children in the winter months. Those risks could be mitigated by delaying school start-times, however, which would also bring additional benefits, including healthier adolescents and better academic performance by middle and high school students.

¹¹⁴ *Id.*

¹¹⁵ *Id.*

Recommendations

Based on its research and findings, and after weighing the costs and benefits associated with the observance of time in Massachusetts, the Commission believes that under certain circumstances the Commonwealth could make a data-driven case for moving to the Atlantic Time Zone year-round (effectively observing year-round DST). Although appreciable costs associated with making this change would result, on balance the Commission finds that doing so could have positive benefits that largely stem from the absence of a spring transition to DST and the additional hour of winter evening light.

Providing an additional hour of winter evening light could bring societal benefits to Massachusetts largely by boosting consumer spending and economic development opportunities, reducing certain types of crime, increasing the population's physical activity level, and cutting greenhouse gas emissions and associated energy costs for residences in Massachusetts from early November to mid-March, when Massachusetts currently observes standard time.

The adoption of year-round DST also would eliminate the spring transition to DST and the week of population-wide sleep loss that results. Preventing that sleep loss could have broad and powerful impacts on public health in the Commonwealth. During the week in question, Massachusetts residents could experience fewer traffic fatalities, workplace injuries, and heart attacks, with many lives and tens of millions of dollars saved as a result.

However, the Commission does not recommend a simple switch to the Atlantic Time Zone, and cautions that several qualifiers should accompany any future conversations or legislative proposals with respect to how Massachusetts observes time. The Commission offers the following blueprint of concerns for a thoughtful implementation of year-round DST, should Massachusetts ever decide to pursue this policy change:

Regional Action

Any move to year-round DST should be regional, because acting alone would make Massachusetts a significant outlier, and could disrupt commerce, trade, interstate transportation, and broadcasting. The Commission recommends that the Legislature adopt year-round DST only if a majority of other Northeast states – possibly including New York – do so as well. To facilitate regional action, the Legislature and Governor should raise this issue with other Northeastern legislative and executive bodies, including the National Conference of State Legislatures, the Council of State Governments, Coalition of Northeast Governors, and gatherings of New England Governors and Eastern Canadian Premiers.

As stated previously, several other Northeast states are already considering bills that would have them observe DST year round. Maine's bill passed both legislative chambers before being laid aside. New Hampshire's passed the House but was rejected in the Senate. Connecticut and Rhode Island are considering such bills but have not voted on them. Vermont is not currently

considering legislation related to year-round DST, but is weighing a resolution urging Congress to abolish DST.¹¹⁶

If a group of Northeast states does decide to pursue year-round DST, then they should also recruit New York, as benefits described in the Findings section of this report would likely be applicable to it and other states as well.

For Massachusetts to spur regional action, the Legislature could consider passing a bill that instructs the Secretary of the Commonwealth to petition the U.S. Secretary of Transportation to place Massachusetts in the Atlantic time zone and—pending the U.S. Secretary of Transportation’s approval of the petition—amend section 10 of chapter 4 of the General Laws in order to opt the Commonwealth out of observing DST. Such a bill should condition the shift taking place only after a majority of other Northeast states have passed legislation to the same end.

Later School Start-Times

Year-round DST would bring darker mornings from early November to mid-March, and without changes to school schedules, could lead to children traveling to school in darkness when the sun rises latest. Although there would be more daylight for after-school activities and travel home for these children (and there are winter school breaks during parts of this time), the early-morning transit time has the potential to pose public safety risks. Moreover, independent of public safety concerns, the Commission has found compelling data that indicate that the early-morning start-times can negatively impact some students’ academic performances, with students not fully awake when they begin classes.

The Commission therefore recommends that any move to year-round DST should be accompanied by statewide standards for delaying school start-times to mitigate safety issues; improve student academic performance, health, and well-being; and add significantly to the other economic benefits related to year-round DST — for example, 8 a.m. for elementary schools and 8:30 a.m. for middle and high schools. These standards could mitigate the negative effects of darker mornings, ensuring that children head to school in the dark for only a handful of days each winter. They could also improve both students’ performance in school, and their physical and mental health.

Public Awareness

The Commission found that the change to year-round DST could cause confusion in broadcasting, commerce, and interstate transportation. That confusion—and any ensuing economic disruption—could be minimized through effective communication with the public. For that reason, the Commission believes that the Legislature should not adopt year-round DST

¹¹⁶ Time Zone Report *supra* note 21.

unless it simultaneously commits funding to educate the public about the implications of the change.

The Legislature would need to focus its public awareness efforts on communities in close proximity to new time zone boundaries. If New York did not join New England states in adopting year-round DST, for example, then people on both sides of the border between Massachusetts and New York would need to be fully informed about the change. Public awareness would be the best way to avoid disruptions caused by confusion around the four-month time difference.

The Legislature would also need to work with Amtrak, Massport, the Massachusetts Department of Transportation, and others to ensure that people traveling to and from Massachusetts would be aware that the Commonwealth does not observe Eastern Standard Time from early November to mid-March. Public awareness campaigns would need to be repeated each November when most states transition from DST back to standard time.

Even if Massachusetts does not adopt year-round DST, public awareness about transitions to and from DST would still be beneficial. A public awareness campaign preceding the spring transition to DST would help residents prepare for the sleep loss caused by the transition so that they could try to mitigate its negative consequences.

APPENDIX A: **Individuals Invited to Testify**

Meeting 1 (January 11, 2017):

- Commissioners only

Meeting 2 (Mar. 15, 2017):

- Jennifer Doleac, University of Virginia Professor, and Nicholas Sanders, Cornell University professor, co-authors of the paper “Under the Cover of Darkness: How Ambient Light Influences Criminal Activity”
- Jon Hurst, President of the Retailers Association of Massachusetts
- Peter Shattuck, Member of the Commission, Director of Acadia Center’s Clean Energy Initiative and Director of the Massachusetts Office

Meeting 3 (Apr. 12, 2017):

- Christopher M. Barnes, University of Washington Professor, and David T. Wagner, University of Oregon Professor, co-authors of the papers “Changing to Daylight Saving Time Cuts Into Sleep and Increases Workplace Injuries” and “Lost Sleep and Cyberloafing: Evidence From the Laboratory and a Daylight Saving Time Quasi-Experiment”
- David Prerau, DST researcher, historian, and author of the book “Seize the Daylight: the Curious and Contentious Story of Daylight Saving Time”
- Jim Smith, General Counsel to the Massachusetts Broadcasters Association
- José C. Massó, Director of Policy at Massport
- Nancy Donoghue, Director of Government Affairs at Massport
- Ed Freni, Director of Aviation at Massport

Meeting 4 (May 31, 2017):

- Dr. Judith Owens, Director of the Center for Pediatric Sleep Disorders at Boston Children’s Hospital, Neurology Professor at Harvard Medical School, and member of the Commission
- Thomas Emswiler, Member of the Commission, public health advocate

Meeting 5 (September 20, 2017):

- Commissioners only

Meeting 6 (November 1, 2017):

- Commissioners only

APPENDIX B: Meeting Minutes

Special Commission on the Commonwealth's Time Zone

Wednesday, January 11, 2017 (Meeting 1)

**Massachusetts State House
Hearing Room 222
Boston, MA 02133**

Members present (appointed by):

Representative Daniel Cahill (Speaker), Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Tim Miley (Governor), Peter Shattuck (Senate President), John Warren (Governor)

Members absent:

Robert LePage (Governor)

Members yet to be appointed:

One from the Speaker of the House

One from the Senate Minority Leader

Meeting Minutes

Senator Donoghue welcomed and thanked the members of the special commission for being in attendance. She introduced the members present in the room and then spoke about the creation of this special commission through Chapter 219 of the Acts of 2016, also known as the economic development bill. She noted that the special commission is charged with conducting a comprehensive study on the commonwealth remaining on Eastern Daylight Time throughout the entire year, with attention paid to the impact that this change would have on the economy as a whole, on the education system, on public health, on the transportation system, on energy consumption, and on commerce. Senator Donoghue said that the special commission is tasked with filing a report by March 31, 2017, a deadline that it will do its best to meet. She stated her hope that the commission would take a data-driven approach.

Members of the special commission then introduced themselves and spoke briefly about their background, their goals for the special commission, and topics they would like to consider at future meetings.

John Warren said that he had worked as a CFO and COO for Reebok and Adidas and would bring his business background to bear on the special commission's work.

Peter Shattuck said he was interested on potential energy and climate change impacts and suggested that the special commission could examine data on energy usage in the weeks before and after time changes.

Thomas Emswiler noted that his op-ed published in the *Boston Globe* two years ago was the first step towards the creation of the commission. He thanked Senator Keenan for filing by request a bill to form the commission and stated his intention to remain objective throughout the process.

Representative Cahill said that he represented Lynn, a gateway city near Boston where transportation is an important issue, and that he will focus on the impact of a time zone change on transportation.

Senator Donoghue reintroduced herself, noting that she was appointed by Senate President Rosenberg, and said that as the Senate chair of the Joint Committee on Economic Development and Emerging Technologies she will be particularly interested on the economic development component of the commission's work.

Representative Finn said that he was new to the idea of changing time zones and that research about its public health effects had caught his attention. He added that the commission was a good opportunity to discuss an issue that the commonwealth might not have otherwise had the chance to address.

Representative Frost noted that the Joint Committee on State Administration and Regulatory Oversight had considered time zone changes in the past and said that although he would keep an open mind, he would also play the role of skeptic. He mentioned concerns including the safety of children going to school in the dark, practical issues related to the possibility of Massachusetts acting without other New England states, and potential problems caused by glare on the commutes into and out of Boston from Western Massachusetts.

Tim Miley said that the Department of Public Health had data that is relevant to the commission's work and that he hoped to bring those resources to bear on the study.

Senator Donoghue said that the commission members needed to elect a chair who would organize the commission and handle administrative issues. Mr. Emswiler nominated Senator Donoghue. Representative Cahill seconded the nomination. The commission members unanimously elected Senator Donoghue, who thanked her colleagues, mentioned the possibility of soliciting input from the public, and suggested that the commission would meet once a month with a full agenda before submitting its data-driven report to the legislature by the early spring.

Senator Donoghue adjourned the meeting at 11:43 a.m.

*Special Commission on the Commonwealth's Time Zone
Wednesday, March 15, 2017 (Meeting 2)*

**Massachusetts State House
Hearing Room 222
Boston, MA 02133**

Members present (appointed by):

Representative Daniel Cahill (Speaker), Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Tim Miley (Governor), Robert LePage (Governor), Dr. Judith Owens (Speaker), Peter Shattuck (Senate President), Yvonne Spicer (Senate Minority Leader), John Warren (Governor)

Meeting Minutes

Senator Donoghue welcomed the members of the special commission and thanked them for being in attendance. She introduced two members of the commission who had been appointed since the January meeting.

Senator Donoghue said that Yvonne Spicer is the vice president for advocacy and educational partnerships at the National Center for Technological Literacy, a role in which she directs the Museum of Science's efforts to improve K-12 STEM education in Massachusetts and around the world. She added that Ms. Spicer—who has had a distinguished career in STEM education, including stints with the Framingham Public Schools, the Newton Public Schools, and the Massachusetts Department of Elementary and Secondary Education, and several state and national advisory boards related to technology and education—will be a great resource and partner on the commission. Senator Donoghue also noted that Senate Minority Leader Bruce Tarr had appointed Ms. Spicer to the commission.

Senator Donoghue then introduced Dr. Judith Owens, director of the Center for Pediatric Sleep Disorders at Boston Children's Hospital and a member of the faculty of neurology at Harvard Medical School. She said that Dr. Owens is an internationally recognized authority on pediatric sleep, and has written more than 75 research and review articles on the subject and that Dr. Owens' extensive knowledge will be incredibly helpful to the commission as it considers the impact of later winter sunrises on sleep schedules and school start times. She noted that Speaker of the House Bob DeLeo had appointed Dr. Owens to the commission.

Senator Donoghue motioned that the minutes of the commission January 15 meeting be approved. Representative Finn seconded the motion, and the minutes were approved unanimously on a voice vote.

Senator Donoghue introduced University of Virginia professor Jennifer Doleac and Cornell University professor Nicholas Sanders, co-authors of the paper "Under the Cover of Darkness: How Ambient Light Influences Criminal Activity," who joined the commission via conference

call. Ms. Doleac and Mr. Sanders said that their paper examined the effect that shifting daylight from the morning to the evening had on crime. They said that the switch to and from daylight saving time (DST) was a natural experiment that enabled them to measure that effect. They said that they found a seven percent decrease in robberies due to an additional hour of evening daylight, including a 27 percent reduction during evening commuting hours, and no corresponding increase in crime during the morning commuting hours. Ms. Doleac and Mr. Sanders concluded that an additional hour of evening daylight had a big, meaningful impact on street crime, and that making DST permanent would therefore also have a meaningful effect.

Thomas Emswiler noted that the paper estimated that the three-week extension of DST in the spring of 2007 generated \$59.2 million in social cost savings due to a reduction in robberies. He said that he had done some back-of-the-envelope math and calculated that if these savings were consistent throughout the year, year-round DST would generate more than \$1.2 billion in social costs savings. Mr. Emswiler asked if that figure sounded right, and Ms. Doleac and Mr. Sanders said that it did.

Dr. Owens asked if there were any data available on how ambient light affects delinquency. Ms. Doleac and Mr. Sanders said that there was not reliable time-based data for delinquency. Dr. Owens also asked if there were any data about crime during the year-round DST experiment that took place nationally between 1974 and 1975. Ms. Doleac and Mr. Sanders said that a study had found a 10 to 13 percent reduction in street crime in Washington, D.C. during the DST experiment. They said this study was not as reliable as their own, however.

Representative Paul Frost asked how much crime occurred around the time of sunset. He also asked if delaying sunset by one hour would delay criminal activity by one hour, rather than reducing it. Ms. Doleac and Mr. Sanders said that a substantial number of robberies occur during the commuting hours around sunset, when there are more people on the street who can potentially be robbed. They added that their study found that criminal activity was reduced due to a later sunset, and not simply delayed by it.

Peter Shattuck asked for the source of the data. Ms. Doleac and Mr. Sanders said that the data came from 558 jurisdictions around the country, including many in New England.

Senator Donoghue thanked Ms. Doleac and Mr. Sanders for their testimony and introduced Jon Hurst, president of the Retailers Association of Massachusetts (RAM) so that he could discuss small retailers' thoughts about switching to year-round DST.

Mr. Hurst said that there was a history of adjusting the clocks or the calendar to promote sales, including changing the date of Thanksgiving to lengthen the shopping season leading up to Christmas. He noted that 70 percent of the economy is driven by the consumer, and that e-commerce makes it more important than ever to look at how policies affect retailers. Mr. Hurst said that nationally, 18 percent of Christmas shopping took place online last year, and that policies including the sales tax, blue laws, and even time zones can incentivize or dis-incentivize consumers to spend locally. He added that weather and sunshine impact consumer choices.

Mr. Hurst said that he surveyed the 4,000 members of his organization about DST policies and received responses from 5 percent of them. He added that the typical response rate was 2 percent, but that surveys about issues that have a significant impact on sales or expenses receive a good response. Mr. Hurst said that 34 percent of the members who responded favored Massachusetts remaining on DST year round; 24 percent favored Massachusetts remaining on standard time year round; 23 percent did not necessarily disagree with the concept of year-round DST but preferred national action on the issue; and 19 percent favored the status quo. Mr. Hurst noted that a majority of the respondents favored year-round observation of time, rather than switching between standard time and DST. He also noted that respondents had mentioned in their comments the need for consistent regional observation of time, especially since many consumers and employees cross state lines to shop or work. Mr. Hurst concluded by stating that RAM had no official position on whether or not Massachusetts should observe year-round DST.

Senator Donoghue asked how sunlight affected sales. Mr. Hurst said that most shopping takes place on weekday evenings and weekends, and that many retailers believe that extra evening daylight attracts people to go shopping and increases sales.

Representative Michael Finn asked Mr. Hurst which option the plurality of respondents had chosen. Mr. Hurst said that the plurality supported year-round DST in order to increase sales, adding that in an age where people can shop on their iPhones, anything that policymakers can do to keep business in Massachusetts is helpful.

Representative Frost asked if out-of-state consumers and employees would be confused if the change to year-round were not regional, if it did not involve New York, or if it did not involve the rest of the East Coast. Mr. Hurst reiterated that RAM had no official position, adding that personally he believed that Massachusetts should not act alone. He said it was the same case with GMO labeling bills. Mr. Hurst suggested that if the commission did recommend a switch to year-round DST, it could recommend that any related legislation not take effect until a certain number of New England states also pass it.

Representative Daniel Cahill asked if DST affected employee health and productivity and said that he would love to see data in those areas. Mr. Hurst said that it was a great question, but one to which he did not have an answer, and suggested that an organization like the Chamber of Commerce might be able to investigate it.

Mr. Shattuck said that it can be difficult to remember the meanings of the terms DST, standard time, and Atlantic Time Zone and asked how clear the meaning of year-round DST was to the members who responded to the survey. Mr. Hurst said that the survey question framed the issue in terms of sales, crime, and health and that he would be happy to share the text of the question with the commission.

Mr. Emswiler said that it would be helpful to do a deeper dive with RAM members in order to ask them about the potential for a regional switch to year-round DST. He noted that related legislation has been filed in Connecticut, Maine, New Hampshire, and Rhode Island.

Senator Donoghue thanked Mr. Hurst for his testimony and introduced commission member Mr. Shattuck so that he could discuss the potential energy impacts of year-round DST.

Mr. Shattuck said that the U.S. had extended DST by weeks in 2007, adding three weeks in the spring and one in the fall. He said that the Department of Energy (DoE) had compared electricity consumption during those four weeks in 2006 and in 2007, which offers a chance to measure the impact of extended DST. Mr. Shattuck said that the DoE analysis found a 0.48 percent drop in electricity consumption nationally and a 0.68 percent drop in New England. He said that factors like air conditioning in the South and New England's location at the eastern edge of its time zone could help account for that difference. Mr. Shattuck also noted that in Massachusetts, electricity consumption increased by 1.2 percent in the morning during the three spring weeks, but decreased by 3.2 percent in the afternoon and evening; electricity consumption increased by one percent in the morning during the fall week, but decreased by 2.8 percent in the afternoon and evening.

Mr. Shattuck said that the National Bureau of Economic Research (NBER) had studied the energy impact of DST by comparing electricity consumption across Indiana counties, some of which observed DST and some of which did not. He stressed this study focused on the impact of DST as it is currently observed and not the impact of extending DST, which is what the commission is charged with considering. Mr. Shattuck said that the NBER study found a 1 percent overall increase in electricity consumption during DST, attributable largely to air conditioning usage, and an increase of two to four percent in early fall. He said that the key takeaways were that the increase was found in the spring, summer, and fall, but not during the winter, and that Massachusetts and Indiana have different energy profiles and climates.

Mr. Shattuck proceeded to describe the context of energy in Massachusetts and New England. He said that in New England, peak demand for electricity occurs in the afternoon during the summer and in the early evening during the winter. He added that peak winter demand poses a problem because the region has developed an overreliance on natural gas for electricity generation, and in the winter natural gas is used for heating. He said that residents felt the impact of that overreliance in the winter of 2013-2014, when natural gas was scarce and its price spiked, causing electricity bills to rise sharply. Mr. Shattuck said that electricity generators that rely on natural gas have since purchased backup fuels including oil and liquid natural gas to prevent the same problem from recurring. He also pointed to a study conducted by the Attorney General's Office that suggested that Massachusetts could meet its energy needs by investing in renewables and energy efficiency, rather than by constructing new natural gas pipelines.

Mr. Shattuck then stated the he wanted to place the DoE study—and its finding that extended DST reduced electricity consumption by 0.68 percent in New England, with particularly strong effects in the afternoon and early evening—within that broader context of energy in Massachusetts and New England. He said that because afternoon and evening are the hours of peak demand, and because solar stops generating electricity during those hours, even a small reduction in afternoon and evening electricity consumption can have significant benefits in terms of reducing energy infrastructure costs and greenhouse gas emissions. Mr. Shattuck concluded by saying that extended DST could produce modest but meaningful electricity savings.

Dr. Owens asked why there was a greater change in electricity consumption in the evening during DST. Mr. Shattuck said that people's routines are more flexible in the evening, so the amount of electricity they consume in the evening can fluctuate more.

John Warren asked if the data included commercial electricity consumption. Mr. Shattuck said that the data included all electricity, including commercial consumption.

Representative Frost said that he had always heard that the energy savings from DST were negligible and asked for Mr. Shattuck's response. Mr. Shattuck said that while the savings were not massive, they were appreciable. He added that energy efficiency reduced Massachusetts' electricity consumption by three percent, enough to make the commonwealth a national efficiency leader, so even a 0.5 percent decrease due to DST would go a long way in helping Massachusetts avoid new infrastructure and environmental costs.

Robert LePage asked if variations in weather impacted the data. Mr. Shattuck said that between summer and winter that impact would be large, but that when comparing certain months from one year to the next it would not be large. Mr. LePage asked what the dollar value of a 0.5 percent reduction in energy savings would be. Mr. Shattuck said that he would have to get back to Mr. LePage with an answer.

Representative Cahill said that he agreed with the analysis of how extended DST would affect electricity consumption in the morning and in the afternoon and evening, even though the electricity consumption of hospitals and similar organizations is to some extent fixed. Representative Frost said that because hospitals always have their lights on he is not sure that they would see savings. Mr. Shattuck said that savings would flow to everyone if year-round DST prevented a buildup of infrastructure to meet peak demand.

Senator Donoghue asked if the DoE study contained the best data available for the commission's purposes. Mr. Shattuck said that it was the best data available to the commission, and that the DoE study was more relevant than the Indiana study.

Senator Donoghue thanked Mr. Shattuck for his testimony and opened the commission meeting to general discussion. Representative Frost said that he remained concerned about children going to school in the dark and mentioned a study conducted in the 1970s that addressed the issue. He added that the commission should hear from Massport and also from television broadcasters, because residents might have to stay up late to watch the Patriots on Sunday Night Football. Representative Finn said that he would like to hear from the entire New England Region. Mr. LePage said that he wanted to hear about the impact year-round DST would have on student and employee performance, the financial services industry, and television broadcasters. In addition to the question of children going to school in the dark, Mr. Emswiler suggested that commission consider a paper published by the American Academy of Pediatrics recommending that school start times be pushed back to a later hour. Dr. Owens noted that she had written the paper. Mr. Emswiler added that Massachusetts could throw its weight around and force Sunday Night Football to start earlier. Representative Frost said that Roger Goodell would never agree to that.

Senator Donoghue said that it was clear that the commission members were very invested in the issue and that the commission would continue to learn more about it.

Senator Donoghue adjourned the meeting at 12:41 p.m.

Special Commission on the Commonwealth's Time Zone
Wednesday, April 12, 2017 (Meeting 3)

Massachusetts State House
Hearing Room 222
Boston, MA 02133

Members present (appointed by):

Representative Daniel Cahill (Speaker), Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Tim Miley (Governor), Robert LePage (Governor), Yvonne Spicer (Senate Minority Leader), John Warren (Governor)

Members absent (appointed by):

Dr. Judith Owens (Speaker), Peter Shattuck (Senate President)

Meeting Minutes

Senator Donoghue welcomed the members of the special commission and thanked them for being in attendance. She motioned that the minutes of the commission March 15 meeting be approved. Representative Cahill seconded the motion, and the minutes were approved unanimously on a voice vote.

Senator Donoghue introduced University of Washington professor Christopher M. Barnes and University of Oregon professor David T. Wagner, authors of the papers “Changing to Daylight Saving Time Cuts Into Sleep and Increases Workplace Injuries” and “Lost Sleep and Cyberloafing: Evidence From the Laboratory and a Daylight Saving Time Quasi-Experiment,” who joined the commission via conference call. Senator Donoghue noted that Mr. Barnes and Mr. Wagner specialize in, among other things, sleep and fatigue issues in the workplace and that of particular interest to the commission is their research and writing about the impact that transitioning to daylight saving time (DST) has on workplace injuries, workplace productivity, and even the sentencing habits of judges. She added that Mr. Barnes has also authored a paper making sleep-related public health policy recommendations.

Mr. Barnes and Mr. Wagner said that their study on workplace injuries measured the effect that transitioning in and out of DST has on sleep using data from the Bureau of Labor Statistics. They said that while they found no effect from the fall transition, workers lost an average of 40 minutes of sleep on the Monday following the spring transition. Mr. Barnes and Mr. Wagner then proceeded to describe the second piece of the study, which relied on 23 years of data from the Mine Safety and Health Administration. They noted that mines were a particularly useful workplace to examine, because mining work occurs largely underground and differences in sunlight would therefore not confound the data. Mr. Barnes and Mr. Wagner said that they found a 5.7 percent increase in the number of injuries on days following the spring transition to DST and a 67.6 percent increase in the number of days lost due to injury, suggesting an increase in the severity of the injuries.

Mr. Barnes and Mr. Wagner then moved on to their study on cyberloafing, the first part of which used Google search data from 203 metropolitan areas to determine whether workers were more likely to visit websites that were unrelated to their jobs on the Monday following a transition to DST. They said that they measured an increase in traffic to entertainment-related websites of between 3.1 and 6.4 percent, which they interpreted as a sign that workers were too tired to focus on their jobs. Mr. Barnes and Mr. Wagner explained that the second part of their study used data from a laboratory experiment to determine the impact of sleep interruption on cyberloafing. They said that they found that an hour of disturbed sleep led study participants to cyberloaf for, on average, 20 percent of the duration of an assigned task.

Mr. Barnes and Mr. Wagner then ran through many of their other studies, which have found that following the spring transition to DST judges hand out longer sentences, minorities are more frequently searched and arrested frivolously, the rates of heart attacks and fatal vehicle accidents increase, and children are less attentive in class and receive lower scores on the SAT. Thomas Emswiler asked if Mr. Barnes and Mr. Wagner could share those studies with the commission. Senator Donoghue said the commission would welcome them, and Mr. Barnes and Mr. Wagner said they would share the studies.

Senator Donoghue thanked Mr. Barnes and Mr. Wagner for their testimony and introduced Dr. David Prerau, a DST researcher, historian, and author. She noted that Dr. Prerau is a world-renowned authority on DST, the author of the book *Seize the Daylight: The Curious and Contentious Story of Daylight Saving Time*, which details the history, science, and politics of the practice, contributed to the largest ever technical study on DST, coauthored three reports to Congress on the subject, and served as a consultant to both the U.S. Congress and Britain's Parliament on legislation related to extensions of DST.

Dr. Prerau said that he was happy to be able to share his 40 years of expertise on DST with the commission. He noted that DST was first practiced during World War I and is now observed in 70 countries and in 48 states. He said that although people can adapt to losing an hour of sleep during the spring transition to DST, there are effects that resemble those caused by jet lag. Dr. Prerau added that these effects could perhaps be mitigated by a public health information campaign leading up to the transition date. He cautioned commission members to carefully distinguish between the effects of the transition to DST and the effects of the period itself.

Dr. Prerau said that one of the major benefits of year-round DST—more sunlight during winter afternoons—has a flipside: darker winter mornings. He noted that with year-round DST in place, January sunrise times would be as late as 8:23 a.m. in Boston and late as 8:23 a.m. in Williamstown. Dr. Prerau said that when Congress experimented with year-round DST in the 1970s there was a negative effect on the safety of children walking to school in the dark, prompting Congress to institute an eight-month DST schedule—longer than the usual six-month schedule, but shorter than the year-round experiment. He added that creating darker, colder commutes during January, the coldest month, could make roads icier or snowier, although he said there was no related data available.

Dr. Prerau said that year-round DST would create a four-month, one-hour time difference between Massachusetts and business and political capitals in New York City and Washington,

D.C., respectively. He noted that the difference would put the commonwealth out of sync with both the stock market and large markets along the East Coast, but had no data on what impact that might have.

Dr. Prerau went on to say that uniformity is a major concern when it comes to the observation of time, noting that after World War II there was hodgepodge of states and cities observing DST on different schedules, which caused chaos. He added that the Uniform Time Act of 1966 instituted national start and end times for DST. He added that following the 2007 extension of DST, Canadian provinces had to choose whether to adjust their DST calendars to match the U.S., and that ultimately every province elected to adopt the new U.S. calendar. He said that a lack of uniformity can affect business by causing confusion around deliveries, calls, and deadlines.

Dr. Prerau then mentioned a number of additional concerns related to Massachusetts ceasing to be in sync with the rest of the Eastern Time Zone, including potential confusion around flight schedules, later start times for live, nationally broadcast events like Sunday Night Football, the State of the Union address, and the Oscars, and the unpleasantness of living near the border between time zones.

John Warren asked if there are any studies of how lack of uniformity in DST observation affects the business community. Dr. Prerau said that there was anecdotal evidence of businesses choosing not to locate in Indiana and noted that the Indiana Chamber of Commerce preferred uniformity.

Representative Frost said he had not thought about the problem of kids going to school in the morning when—in addition to being dark—it is cold and icy. He noted that Massachusetts school districts sometimes delay school due to icy conditions or extreme cold. Dr. Prerau said that in 1974 some schools sought to avoid those problems by starting an hour later, which caused some conflicts with work. He added that some schools distributed reflective tape to students.

Senator Donoghue thanked Dr. Prerau for his testimony and introduced Jim Smith, general counsel to the Massachusetts Broadcasters Association (MBA), a trade organization that represents more than 200 radio and television broadcasters in the commonwealth.

Mr. Smith said that year-round DST would be hard to implement for Massachusetts broadcasters. He said that national evening news programs would be broadcast an hour later during the four-month period when Massachusetts would be out of sync with the rest of the Eastern Time Zone, affecting local evening shows. He added that the 8 p.m. to 11 p.m. slot for network programming would become a 9 p.m. to midnight slot, disrupting local news broadcasts, which are important to broadcasters' bottom lines and to the public interest.

Mr. Smith mentioned the potential for additional confusion in places like the Berkshires, where broadcasts are often coming from Albany. He said there would also be a need to educate broadcasters about the implications of the change to year-round DST, noting that there are sometimes restrictions on when syndicated shows can be broadcast. *The Ellen DeGeneres Show*, he said, is embargoed until a certain time. Mr. Smith said that radio would also be affected by the

change to year-round DST. He said that national news shows, for example, have to be coordinated across time zones.

Mr. Smith went on to say that the biggest complication of year-round DST would be the scheduling of live television events. He said that an event like the Oscars, which ended at around 12:10 a.m. this year, would instead end at around 1:10 a.m. With regard to sports, Mr. Smith said that p.m. is primetime for school and work night events and leagues would not alter their schedules to accommodate Massachusetts because the need to capture the West Coast market is greater than the need to capture the Massachusetts market. He said that even if every New England state observed year-round DST they would still be outliers, adding that there would be no changes in national live broadcast schedules if New York or Pennsylvania did not join New England.

Mr. Smith concluded by stating that the practical concerns of observing year-round DST are too great for the MBA to support it and by thanking the commission for including the MBA.

Representative Frost asked whether the MBA would be more supportive if New York changed to year-round DST in addition to New England. Mr. Smith said yes, reiterating that New England acting alone presents enormous issues to broadcasters.

Mr. Emswiler asked if local news was the biggest revenue source for broadcasters. Mr. Smith said it was. Mr. Emswiler asked if there were local news shows during morning hours. Mr. Smith said there were. Representative Frost asked if revenue earned from an additional hour of local news in the morning would offset revenue lost due to changes in local news schedules in the evening and at night. Mr. Smith said that it would not, because the 6 p.m. and 11 p.m. slots are the biggest revenue generators.

Senator Donoghue thanked Mr. Smith for his testimony and introduced José C. Massó, director of policy at Massport. She noted that Mr. Massó has also served as Massport's director of community relations and that he advises the agency on policies that might affect its ownership and management of Boston Logan International Airport, Hanscom Field, Worcester Regional Airport, and the Port of Boston.

Mr. Massó said that he was joined by Nancy Donoghue, Massport's director of government affairs, and Ed Freni, Massport's director of aviation. He noted that airports used universal time to communicate with each other, but not with the public, and said that a change to year-round DST would cause confusion in nearby destinations served by Logan International Airport, including New York City, Washington, D.C., and Atlanta. Mr. Massó added that a number of transportation services that connect to Logan, including rail and bus services, would have to adjust their schedules.

Mr. Massó said that Logan serves 36 million passengers each year, with millions of them taking international flights. He said that there is already a three weeks of the year during which the U.S. observes DST and Europe does not, which causes confusion and creates new challenges. Mr. Massó commented that there would be similar confusion were Massachusetts to observe year-round DST, although the situation might be better if all the New England states acted together.

Representative Frost asked whether Massport would be more supportive if New York changed to year-round DST in addition to New England. Mr. Massó said that it is important not to be an outlier, but the bigger the better when it comes to the size of the region observing year-round DST.

Representative Frost asked if the change to year-round DST would cause confusion for business travelers. Mr. Eni said that there would be a new layer of confusion.

Mr. Miley asked for further explanation of the challenges associated with the three weeks during which the U.S. observes DST and Europe does not. Mr. Eni said that during those three weeks there is a need for additional staff at gates and resources are needed to plan for the additional complexity. He added that the entire U.S. is dealing with that complexity during those three weeks.

Robert LePage asked about the impact on travelers going to airports in Hartford or Albany from Western Massachusetts. Mr. Eni said that if Massachusetts were out of sync with a neighboring state, then travelers would have to do the same mental calculations that they do now when traveling to a different time zone.

Mr. Warren asked if there were significant costs to nonconformity. Mr. Eni said that he did not have specific numbers, but that there would be staff costs, scheduling costs, and transaction costs.

Mr. Emswiler asked if most of Logan's passengers were from New England. Mr. Eni said yes, but not exclusively.

Representative Frost asked if there would be costs to an advertising campaign educating passengers about the change to year-round DST. Mr. Massó said there would be costs to such a campaign.

Mr. Miley asked what percentage of Logan's 36 million annual passengers stop at the airport to make a connection. Mr. Eni said about 10 percent of passengers are making a connection.

Senator Donoghue thanked Mr. Massó for his testimony and adjourned the meeting at 12:50 p.m.

Special Commission on the Commonwealth's Time Zone
Wednesday, May 31, 2017

Massachusetts State House
Hearing Room 222
Boston, MA 02133

Members present (appointed by):

Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Yvonne Spicer (Senate Minority Leader), John Warren (Governor); Dr. Judith Owens (Speaker), Representative Daniel Cahill (Speaker),

Members absent (appointed by):

Peter Shattuck (Senate President), Tim Miley (Governor), Robert LePage (Governor)

Meeting Minutes

Senator Donoghue welcomed the members of the special commission and thanked them for being in attendance. She motioned that the minutes of the commission April 12 meeting be approved. The minutes were approved unanimously on a voice vote.

Senator Donoghue introduced commission member Dr. Judith Owens, director of the Center for Pediatric Sleep Disorders at Boston Children's Hospital and a professor of neurology at Harvard Medical School, to discuss the impacts of year-round DST on student sleep, health, and safety.

Dr. Owens began her presentation by introducing basic background information on the function of sleep. She explained that sleep is regulated by two simultaneous processes, the 24 hour circadian rhythm of sleep/wakefulness and the sleep drive. Dr. Owens said that the sleep drive is contingent on a number of factors including how long a person has been awake, the quantity and quality of the person's previous night's sleep, and the person's individual sleep needs. She then provided a more thorough explanation of the circadian timing system, the governing function of all physiologic systems in the human body. She explained that each cell in the body possess an internal clock that must be synchronized with other cells and with the environment, adding that misalignment between the internal clock and the external light-dark cycle can have negative consequences for a person's physiologic function and health. Dr. Owens stressed that it is not just how much a person sleeps, but also when a person sleeps that has a significant impact on well-being. Dr. Owens explained that sleep regulation consists of two competing functions, the homeostatic sleep drive and the circadian wake drive, which fluctuate throughout the day and impacts a person's level of alertness.

Dr. Owens said that it is critically important for adolescents to get a healthy amount of sleep every night. She explained that all adolescents experience a shift in their sleep patterns, especially with the onset of puberty, and that as a result of this biological shift, sleep times and wake times change drastically. According to Dr. Owens, adolescents are biologically programmed to wake up at 8 a.m. or later, but due to school start times, many teens are required

to wake up much earlier, at a point in their sleep cycle when they are the least alert. As a result, Dr. Owens said, many adolescents are not sleeping enough during the week and trying to compensate by sleeping in on weekends. She added that from a biological perspective, sleeping in cannot make up for insufficient sleep during the week and can actually exacerbate problems with the body's sleep cycle, a phenomenon known as "social jet lag" that can persist for up to three days, causing daytime sleepiness, poor concentration, or a depressed mood. Dr. Owens stated that eight to 10 hours of average sleep is needed for middle school and high school students to maintain optimal health, safety, and achievement, while children ages six to 12 need nine to 12 hours of sleep.

Dr. Owens then discussed sleep's effect on performance, health, and safety. She explained that either too much sleep or too little sleep can drastically change the brain's ability to function in response to the environment, impacts gene activation, slows the ability to recover from stress, and causes the release of stress hormones. Dr. Owens added that lack of sleep has serious negative impacts on executive functions such as planning, problem solving, decision making, divergent thinking, judgment, motivation, and emotional response. In addition, she said that the reward-related functions of the brain undergo changes during adolescence that, if combined with insufficient sleep, can impact teen's decision making behaviors and their ability to perceive negative consequences, which leads to increased risk taking. Dr. Owens said that teens who slept for fewer than eight hours on average were more likely to be involved in physical altercations, smoke cigarettes or marijuana, drink alcohol, be sexually active, feel sad or hopeless, and have considered suicide than teens who slept for eight or more hours on average.

Dr. Owens went on to explain the effects of sleep loss on a person's diet. Dr. Owens stated that studies have shown that lack of sleep can be associated with an increased risk of obesity; as a person's sleep duration affects hunger, food intake, eating patterns, physical activity, and insulin metabolism.

According to Dr. Owens, drowsy driving accounts for roughly 7% of all crashes in which a vehicle is towed from the scene, 13% of crashes that result in hospital admission, and 16-21% of all fatal crashes. Dr. Owens expounded upon this by stating that driver who are 16 to 25 years of age are involved in more than 50% of the 100,000 police-reported fatigue-related crashes each year. Dr. Owens stressed the dangers our drowsy driving by informing the commission that sleep loss impairments can be just as dangerous as alcohol intoxication in drivers.

Dr. Owens then transitioned her presentation to the topic of school start times and how adolescents would greatly benefit from additional sleep. Dr. Owens shared with the committee that the American Academy of Pediatrics recommended that schools not start until 8:30 AM or later, to allow teens to get the appropriate amount of sleep during the growth years.

Dr. Owens presented information that supports the concept of delayed school start times and went on to explain that even a modest delay of 30 minutes has been shown to have significant impacts on student health and academic achievement. Dr. Owens continued to support this claim by stating that students who get more sleep have improved attendance, lower rates of tardiness, higher grades, and a declined dropout risk. Dr. Owens also shared delayed start times are

associated with improvements in mood, health, and safety; as there is a significant decline in early morning car accidents amongst teenaged drivers.

Dr. Owens then went on to present information on elementary school start times and how the data is not as extensive as studies that have been done on middle school and high school students. Dr. Owens says that this lack of data is due to school-aged children being more likely to be “morning people” who have a strong preference for earlier bed and wake times.

Dr. Owens included detailed information on Massachusetts public school start times. According to a study presented by Dr. Owens, the average start time for public schools in Massachusetts was 7:53 AM in the 2011-2012 school year, but dropped to 7:37 AM in the 2014-2015 school year. Dr. Owens also shared that in the 2011-2012 school year only 8% of all Massachusetts public schools started before 7:30 AM, but that average has increased to 26% during the 2014-2015 school year.

Dr. Owens then proceeded to explain the concept of civil twilight. According to Dr. Owens, civil twilight is when the sun is just below the horizon and there is enough natural light to have high visibility to do most outdoor activities. Dr. Owens stated that civil twilight occurs in Massachusetts approximately 30 minutes before sunrise.

Dr. Owens presented information highlighting the impact that shifting time zones has on civil twilight and sunrise in Massachusetts. According to Dr. Owens, civil twilight and sunrises occurs 30 minutes to an hour later during daylight saving time in the months of November, December, January, and February than when on Eastern Standard Time. Dr. Owens proceeded to explain what this effect has on school start times.

According to Dr. Owens, if school starts between 7:00 AM and 7:30 AM, commutes will be in complete darkness for almost all four months and before sunrise for all four months; if school starts between 7:30 AM and 8:00 AM, commutes will be before civil twilight for three months and before sunrise for most of four months; if school starts between 8:00 AM and 8:30 AM, commutes will be before civil twilight for two months and before sunrise for two months; and if school starts at 8:30 AM or later, commutes will be after civil twilight for all four months and after sunrise for most of four months.

Dr. Owens went on to discuss safety concerns for elementary school students in regards to early morning commutes. According to Dr. Owens, shifting time zones would increase the number of days that elementary school children would be waiting for the bus or walking to school before sunrise. Dr. Owens stated that additional safety measures may be needed, such as; lighted bus stops, neighborhood school bus stop monitoring by parents when it is dark in the winter; and walking patrols.

Dr. Owens then discussed potential safety concerns for high school students. Dr. Owens explained that high school students may be more prone to exacerbated seasonal affective disorder and increased car accidents due to lack of light in the morning hours of winter. Dr. Owens also provided information showing that there are significantly more teen involved car crashes in the morning during the school year than during the summer.

Dr. Owens concluded her presentation by stating that she would support Massachusetts changing time zones only if delayed school start times would be considered in the commission's final recommendations. Dr. Owens stated that due to concerns for sleep, health, and wellbeing, all Massachusetts schools should start after 8:00 AM and all middle school and high schools should start after 8:30 AM.

Senator Donoghue then introduced commission member and public health advocate Thomas Emswiler. Mr. Emswiler greeted the commission and began a presentation on the public health impacts that daylight saving time has on the human body.

According to Mr. Emswiler, shifting daylight patterns and sleep deprivation accounted for 30 daylight saving time related fatalities annually in the United States between 2002 and 2011. Mr. Emswiler also elaborated to explain that daylight saving time had a societal cost of \$275 million annually in the United States.

Mr. Emswiler then went on to explain the immediate health impacts that daylight saving time has on public health. According to Mr. Emswiler, there is an increased likelihood of heart attack within the first three days of transitioning to daylight saving time, with those under the age of 65 being affected the most.

Mr. Emswiler also stated that when the United States expanded daylight saving time in the United States, there was a 30 minute increase in daily outdoor recreation, a nine minute decrease in television viewing, and people burned 10% more calories; one pound of body fat every 2.5 weeks.

Mr. Emswiler then concluded his presentation by explaining that the shift to daylight saving time is responsible for increased workplace injuries and springing forward is bad for people's health.

Senator Donoghue thanked the speakers for their testimony.

The Commission members engaged in general discussion concerning the testimony from the speakers. The meeting was adjourned at 12:45 p.m.

**Special Commission on the Commonwealth's Time Zone
Wednesday, September 20, 2017**

**Massachusetts State House
Hearing Room 222
Boston, MA 02133**

Members present (appointed by):

Chairman Eileen M. Donoghue (Senate President), Thomas Emswiler (Senate President), Representative Michael Finn (Speaker), Representative Paul Frost (House Minority Leader), Dr. Yvonne Spicer (Senate Minority Leader), Dr. Judith Owens (Speaker), Representative Daniel Cahill (Speaker), Mr. Peter Shattuck (Senate President), Ms. Jennifer Barrelle (Governor), Mr. Robert LePage (Governor)

Members absent (appointed by):

Mr. John Warren (Governor)

Meeting Minutes

The meeting opened at 2:00 p.m. as Senator Donoghue welcomed the members of the special commission and thanked them for being in attendance. She motioned that the minutes of the commission May 31 meeting be approved. The minutes were approved unanimously on a voice vote.

Senator Donoghue introduced new commission member Jennifer Barrelle, Chief of Staff to the Department of Public Health. Ms. Barrelle will fill the commission appointment previously held by Tim Miley, formerly of the Department of Public Health.

Senator Donoghue explained that the purpose of today's meeting is to have a general discussion about the draft report that was circulated to the commissioners, and that there would not be a vote during this meeting.

Senator Donoghue opened the session to comments from fellow commissioners.

Representative Frost offered comments about the draft report and said that he believed Massachusetts could not switch time zones without New York, and expressed concern about the safety of children in the dark if a switch were to be made. He offered further comments cautioning about potential negative implications of pushing everyone back and suggested that the remedy to his concerns may be the need for more study. He also thanked the commissioners for a good commission with spirited debate and stated it was his belief that the commission was worthwhile even if they did not all agree.

Senator Donoghue responded and said she first wanted to recognize that this commission was a result of a citizen's petition to explore a serious and worthwhile issue, and that she appreciated the civic participation in the Legislature. Senator Donoghue went on to explain that the report was a data-driven analysis that looked into many factors and found there is no solid data as to

why we continue to spring forward and fall back in 2017. She also emphasized the positive economic development and public safety implications of making a switch and went over the recommendations being offered including the need for a regional approach, the idea of starting school start times later to ameliorate safety concerns, and the need to engage in educational public outreach programs if any switch were to be effected.

Dr. Owens spoke next and commented that she viewed the report as a superb draft that captured the substance of the testimony. Dr. Owens asked about when the report and recommendations would be implemented and what kind of lead time would be required. Senator Donoghue said that the final report would be issued to the Legislature and then it would be up to the body to decide whether to file legislation to move the process forward. She added that public involvement would be critically important. Mr. Emswiler added that the last time the dates for recognizing daylight saving time changed, the state had three years to prepare, and suggested that nothing should be done without at least one year of lead time.

Representative Cahill inquired about when comments to the draft should be submitted and it was decided that comments would be due to the Chair by Monday, October 2, and that a final meeting to vote on the report would occur on November 1.

Mr. Shattuck suggested that the draft include reference to forums at the executive level to continue the discussion and recommend that the executive branch is directed to bring this issue up with other governors/administrations including the Coalition of Northeast Governors (CONEG) and the annual gathering of New England Governors and Eastern Canadian Premiers (NEG-CEP).

Mr. Emswiler asked the commission what members thought would be the right number of states or percentage of the New England population to consider necessary in order to have regional action to make a switch. There was general discussion of this issue with Representative Frost and Mr. LePage stating that a change would need to include New York because New York is more important to Massachusetts' commerce than Vermont. Mr. LePage added that, regardless of the number of states that would make a switch in the future, we as a state should do more now to help manage our current system better. Public health announcements or campaigns about the impacts of "springing forward" and "falling back" might be useful.

The meeting was adjourned at 2:45 p.m.

STATEMENT BY ALBERT SCHERR
PROFESSOR OF LAW, UNH FRANKLIN PIERCE SCHOOL OF LAW
HOUSE EXECUTIVE DEPARTMENTS & ADMINISTRATION COMMITTEE
HOUSE BILL 499
FEBRUARY 11, 2021

I have been on the faculty at UNH Law for over 25 years and, prior to that, I was a public defender in New Hampshire for 13 years. I teach, write and lecture about privacy issues in the criminal justice system. I have been involved in the criminal justice system in New Hampshire for almost 39 years and have worked closely and on a bipartisan basis with many legislators on criminal justice reform issues. In particular, I worked with then Representative Neal Kurk on what became Part I, Article 2b of the New Hampshire Constitution, NH's constitutional amendment on privacy. Recently, I chaired the Portsmouth Police Commission's sub-committee on bodycams, tasked with deciding whether the Portsmouth Police Department should adopt bodycams.

As always, I make this statement in my individual capacity, and the opinions I am expressing are solely mine and are not those of either UNH Franklin Pierce School of Law or of the University of New Hampshire. I appreciate the opportunity to provide this statement to this committee and ask you to amend HB 499 as written with the proposed amendment and *Ought to Pass* on the amended HB 499.

THE EVER-INCREASING WAVE OF 21ST CENTURY TECHNOLOGY I have been involved in the criminal justice system in New Hampshire long enough to have witnessed the transition from 20th century technology like fingerprints, pen registers, wiretaps and house searches to 21st century technology like surreptitious DNA harvesting, geolocation cellphone searches and Global Positioning System (GPS) surveillance. Facial surveillance systems are another, newer installment of 21st century technology that, like others, focuses much more on the acquisition of intangible information than physical objects.

Facial surveillance technology allows the government, if it so desires, to track your whereabouts in public; to capture a digital representation of your face; to store your digital face in a database with millions of others forever and to search it whenever they wish for whatever purpose they wish. Currently, it is estimated that 117 million American adults – approximately half of all American adults - are in a law enforcement face recognition network.

Effectively, this technology allows the police to replace live and photo-lineup eyewitness identification procedures that are well-regulated in terms of reliability, suggestiveness and other issues by tight constitutional due process and right to counsel concerns with an unregulated, freestyle artificial intelligence system driven by technician-generated algorithms.

The use of facial recognition technology implicates several concerns, constitutional as well as practical. In this statement, I intend to discuss the constitutional concerns and then to focus primarily on the paramount practical concern with facial recognition technology: its verified unreliability. In essence, putting aside the very real legal concerns, permitting this technology does not make practical sense.

CONSTITUTIONAL CONCERNS WITH FACIAL RECOGNITION TECHNOLOGY

Constitutionally, 20th century technology was regulated reasonably well by the U.S. Supreme Court's interpretation of the 4th Amendment and the NH Supreme Court's interpretation of Part I, Article 19 of the New Hampshire Constitution. Though both read like they protect our privacy in physical objects or locations, the courts have worked hard to adapt the language to circumstances where the invasion of privacy was not technically physical but rather a collection-of-non-tangible-information.

The 21st Century has brought vastly more sophisticated technologies to the table. Several of those technologies implicate privacy-in-public issues. Let me speak of one U.S. Supreme Court case that captures the problem that courts have been confronting with 21st century technology, particularly with acquiring personal information from someone in a public place. In *U.S. v. Jones*, the Washington D. C. police put a GPS tracking device on the bottom of Jones's SUV. They suspected him of being a drug dealer and wanted to track his whereabouts. They then tracked him for 10 days and acquired a wealth of information about his daily habits in public. The issue in the case was whether the police needed a search warrant to place the GPS on the SUV to gather the public-whereabouts information.

The U.S. Supreme Court said yes, the police needed a search warrant as Jones had a 4th Amendment reasonable expectation of privacy even in his public whereabouts as gathered by the police. This is a very important decision that explicitly protects a version of publicly-available personal information.

There is no question that if a police officer had simply tailed Jones in the old-fashioned way, no 4th Amendment privacy interest would have been implicated. But, a high-tech tailing that collected the same publicly-available information received 4th Amendment protection. Acquisition by the police of a digital representation of one's face and its placement in a massive database implicates the same 4th Amendment concerns. The use of such a digital representation to track someone's whereabouts similarly invokes the 4th Amendment.

What's even more concerning is that the use of any digital facial representation with the database is unreliable.

FACIAL SURVEILLANCE TECHNOLOGY & THE NOT-READY-FOR-PRIME-TIME PROBLEM

New Hampshire is not the first to contemplate banning this invasive technology. Nationally, several municipalities have already banned facial surveillance technology, including San Francisco & Oakland in California and Cambridge and Somerville in Massachusetts. Internationally, the European Union is seriously considering a five-year pause in the use of facial surveillance technology. My understanding is other municipalities and the State of New York are also considering bans.

The primary issue in these jurisdictions has been the unreliability of facial surveillance technology. A recent federal report from the National Institute of Standards & Technology (NIST) found that the technology was unreliable when used to identify people of color, women, the elderly and youth. What's more, its unreliability included both false positives and false negatives.

Specifically, it found that “false positives are higher in women than in men and are higher in the elderly and the young compared to middle-aged adults. Regarding race, we measured higher false positive rates in Asian and African American faces relative to those of Caucasians. There are also higher false positive rates in Native American, American Indian, Alaskan Indian and Pacific Islanders. These effects apply to most algorithms, including those developed in Europe and the United States.” Not infrequently, these false positive rates were of an order of magnitude or more greater. In one instance, it found that Asian and African American faces were sometimes misidentified 100 times more than their white counterparts.

Beyond such state and municipality regulatory efforts, businesses have assessed the reliability and usefulness of facial recognition technology. Axon Corporation is one of the leading providers of police-technology in the United States. For example, they provide bodycam technology to many police departments, including some in New Hampshire. As a part of their commitment to corporate responsibility, they have an Artificial Intelligence (AI) and Policing Technology Ethics Board.

The Board “operates independently from the company and is made up of experts in the fields of AI, computer science, privacy, law enforcement, civil liberties, and public policy. The Board advises Axon around ethical issues relating to the development and deployment of AI-powered policing technologies and works to ensure these technologies ultimately serve the communities where they will be used.”

Significantly, based on recommendations from this independent Board, Axon made the decision that it was not good business for them to make facial recognition technology a part of their bodycam packages they were selling to police departments. They said:

“Face recognition technology is not currently reliable enough to ethically justify its use on body-worn cameras. At the least, face recognition technology should not be deployed until the technology performs with far greater accuracy and performs equally well across races, ethnicities, genders, and other identity groups. Whether face recognition on body-worn cameras can ever be ethically justifiable is an issue the Board has begun to discuss, and will take up again if and when these prerequisites are met.”

<https://www.policingproject.org/axon-fr>

Appreciate carefully what Axon has decided. They make money off technology packages they sell to police departments. They would make more money off packages that include facial-recognition technology. Nonetheless, they have decided not to include that technology in the packages they sell *because facial recognition technology is not currently reliable enough to ethically justify its use on body-worn cameras. Its use is not good business for them.*

CONCERNS WITH HB 499 AS WRITTEN

As currently written, HB 499 is legislation that is pro-facial recognition technology (FRT) surveillance. It allows its use for 72 hours without a warrant; without probable cause and without even reasonable suspicion. After 72 hours, it either allows its use with a “court

order” that, as written, requires neither probable cause nor that the police meet any other set of criteria for issuance.

It also creates exceptions that allow the police to surveil an individual or a group of individuals without even an ill-defined court order if they think – that is, they have “reasonable grounds” - that they’ll be able to get a court order after the fact. It also speaks of an officer being able to surveil someone with FRT as long as they have “exigent circumstances” but it leaves out the primary requirement of the use of the exigent-circumstances exception under the Fourth Amendment: the existence of probable cause to believe a crime has been committed and evidence of that crime will be found by use of FRT surveillance.

As currently written, HB 499 is a pro-FRT bill.

PROPOSED AMENDMENT TO HB 499

The proposed amendment to HB 499 simplifies and clarifies HB 499. IT says simply, to use FRT you must have a search warrant supported by probable cause and issued by a neutral and detached magistrate. It cures any constitutional problems with FRT surveillance as it does not have a 72-hour unrestrained-freedom-of-use provision; it does not have the expansive exceptions to the illusion of an FRT surveillance ban contained in HB 499 as written and it is abundantly clear that probable cause as determined by a neutral and detached magistrate is required.

CONCLUSION

New Hampshire needs to confront the constitutional privacy issues that face recognition and surveillance technology raises. Those constitutional concerns are adequately addressed by HB 499 with the proposed amendment. I ask you to amend HB 499 as written with the proposed amendment and ***Ought to Pass*** on the amended HB 499.

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Lynn Clowes](#)

Sent: Monday, February 8, 2021 12:41:25 PM

To: ~[House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Dear Committee Members,

The bill NH HB544, to my research, appears to be non helpful to NH.

I believe that it contradicts core public health findings; that it promotes a narrative that portrays addressing racism as dangerous (in contrast I believe we —as a society-- gain a lot when we acknowledge and address racism); the bill is also not in line with historic findings; and the bill is vague and could be used to delegitimize potential future training on race or equity or related issues.

Please do not turn this bill into law in NH. It will not help us become a more competitive workforce in this global economy. It will be a step in the wrong direction.

Sincerely,
Lynn Clowes
Warner NH

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Godwin, James](#)

Sent: Tuesday, February 9, 2021 7:42:04 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Is there a way to make it open for the public to analyze and debate critical race theory itself?
More specifically to debate the topic on college campuses?

Get [Outlook for Android](#)

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [scott](#)

Sent: Tuesday, February 9, 2021 3:04:30 PM

To: [~House Executive Departments and Administration](#)

Subject: HB85 - NH Association of Broadcasters Letter to House Members

Importance: Normal

Attachments:


[NHAB - 2021 - Letter Opposing HB 85 Time Zone Bill.docx](#) 

Good afternoon,

Attached is a letter from the NHAB Executive Directors to members of the committee regarding opposition to HB85.

Regards,

Scott Spradling

Archived: Wednesday, April 7, 2021 12:44:53 PM
From: Jay Pea
Sent: Tuesday, February 9, 2021 10:07:41 PM
To: ~House Executive Departments and Administration
Subject: HB-85: Oppose—Amend to permanent Eastern Standard Time
Importance: Normal
Attachments:
[Save Standard Time to NH Cmte.pdf](#) 


Dear Honorable Legislators,

Please find attached a letter in opposition to HB-85. Please stop this bill, refer it to the Committees on Health, Children, and Education, and recommend its amendment to permanent Eastern Standard Time. I would be glad to provide expert statements against this bill's planned policy from the scientific health community, and to provide verbal testimony.

Sincerely,

Jay Pea
Save Standard Time
SaveStandardTime.com
[Twitter.com/SaveStandard](https://twitter.com/SaveStandard)

[LinkedIn.com/in/SaveStandard](https://www.linkedin.com/in/SaveStandard)
+1-415-484-3458

Archived: Wednesday, April 7, 2021 12:44:53 PM
From: Sara K. Giroux
Sent: Wednesday, February 10, 2021 12:17:56 PM
To: ~House Executive Departments and Administration
Cc: Paul A. Worsowicz
Subject: HB 85
Importance: Normal
Attachments:
[Motion Picture Association Testimony on HB 85.pdf](#) 

Dear Honorable Members of the House Executive Departments and Administration Committee,

On behalf of Motion Picture Association, Inc. please find attached testimony in opposition to HB 85, relative to using Atlantic Standard Time in New Hampshire.

Should you have any questions, please do not hesitate to contact Paul Worsowicz, registered lobbyist for Motion Picture Association, Inc. at worsowicz@gcglaw.com or (603) 491-8346.

Sincerely,
Sara Giroux

Sara Giroux, Government Relations Coordinator
Gallagher, Callahan & Gartrell, P.C.
214 North Main Street
Concord, NH 03301
(603) 545-3602
<http://www.gcglaw.com>

NOTICE REGARDING PRIVILEGED COMMUNICATION - The information contained in this electronic message is intended only for the addressee named above. The contents of this electronic message are or may be protected by the attorney-client privilege, work product doctrine, joint defense privileges, trade secret protections, and/or other applicable protections from disclosure. If the reader of this message is not the intended recipient, you are hereby notified that any use, dissemination, distribution or reproduction of this communication is strictly prohibited. If you are not the intended recipient, please contact the sender and delete all copies.

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Kyle Reynolds](#)

Sent: Wednesday, February 10, 2021 1:09:16 PM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

It may be divisive, but implicit bias has been shown conclusively to have a real and powerful effect on almost all aspects of our lives: our education, psychological development, personal and professional growth, the list includes just about any sphere where the brain is employed. Implicit bias is not a trendy theory or conceptual understanding of reality... it is foundational to the way our brains develop and understand a very complex world for which we do not have complete information. Our brain must fill in blank spots, and it will fill it with whatever understanding it can rectify with other beliefs, whether those beliefs have empirical evidence or not.

This bill is itself a form of bias. It seeks to disregard truth in favor of a status quo those in power would like to hold.

The sponsors of this bill are either woefully ignorant or willingly ignoring the truth of our humanity.

Please do the right thing and oppose this bill.

Kyle Reynolds
3 Knoll Road
Wolfeboro, NH 03894

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Vinnie Baiocchetti](#)

Sent: Wednesday, February 10, 2021 8:22:27 PM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Attachments: [2021 HB 606 Executive Departments and Administration.docx](#);

Thank you for considering my testimony, I appreciate the ability to testify.

Please feel free to contact me if you have any questions.

Vinnie Baiocchetti
Gilmanton Iron Works, NH

Archived: Wednesday, April 7, 2021 12:44:53 PM


From: [Scherr, Albert](#)

Sent: Wednesday, February 10, 2021 8:03:46 PM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Attachments: [Statement by Albert Scherr before the House ED & A Committee \(2-11-21\).docx](#) 
;

Attached is my testimony on HB 499

Best,

Albert (Buzz) Scherr
Professor of Law
UNH School of Law
Concord, NH 03301
cell:603-828-6515

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Tom Emswiler](#)

Sent: Thursday, February 11, 2021 9:17:46 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Attachments:

[Special_Commission_Commonwealths_Time_Zone.pdf](#) 

Hello, please see my prepared testimony below. I've also attached the Mass. Special Commission report to this email.

Thanks,
Tom Emswiler

HB85 - relative to using Atlantic Standard Time in New Hampshire
Statement of Tom Emswiler from Quincy, Massachusetts

February 11, 2021

Good morning; I'm Tom Emswiler from Quincy, Massachusetts and I'm here to ask for your support of HB85, which would extend New Hampshire's observance of summer time from 8 months a year to year-round. This regional move is supported by the conclusion of a Special Commission on the Massachusetts Time Zone from November 2017.

My involvement in this issue began in 2014 when I penned a *Boston Globe* op-ed titled "Why Mass. should defect from its time zone." The column became a top-read article in the *Globe* for several days after it was published. Realizing I might have a workable idea on my hands, I contacted Massachusetts Senator John Keenan's office and introduced a bill by-request to convene a commission to study the idea. This is usually where the story ends; my understanding is that bills by-request rarely go anywhere.

So you can imagine my surprise when I learned the bill was added to the 2016 economic development bill. Before I knew it my little bill-that-could was a law. I was nominated to serve on the Commission, and we met throughout 2017. Our report was issued about three and a half years ago.

By a vote of 9-1 the Commission endorsed a careful, deliberate, regional move of Massachusetts and other states to observe Atlantic Standard Time year-round, effectively the same as having daylight saving time all year. For 8 months a year,

there would be no change. HB85 would have our states join together to petition the U.S. Department of Transportation to allow us all to move to Atlantic Standard Time.

The executive summary of our report is only three pages and I encourage you to read it. Our commission found that Atlantic Standard Time could encourage residents to dine out and shop more. Extra daylight could also save energy and reduce greenhouse gas emissions without the need for artificial light. Eliminating the spring forward change could reduce heart attacks, car accidents, workplace accidents, and cyber-loafing.

Finally, I want to address school start times. It's true that if we adopt this change in a vacuum, we'd have kids walking to school in the dark. My wife and I have two children in elementary school. I would never suggest making a change that puts them or other children in harm's way.

We learned that pediatric sleep experts, including Dr. Judith Owens of Boston Children's Hospital who served on this commission, recommend that school not start until 8:30 a.m., well after an Atlantic Standard Time sunrise.

I appreciate the Committee holding this hearing and for the opportunity to testify. Our commission met throughout 2017, studied the issue, and recommended that we make this change. HB85 would be that change. Thank you and I'm happy to take any questions.

<The report can be found at this link below and attached to this email.>

<https://malegislature.gov/Search?SearchTerms=commonwealth+time+zone+report>

###

--

Tom Emswiler
tomems@gmail.com
(202) 270-6839

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Nancy Rideout](#)

Sent: Thursday, February 11, 2021 9:54:58 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration


Importance: Normal

NH House of Representatives should be ASHAMED of themselves for even considering such a bill as this.

Nancy Rideout

6 Bashan Hollow Road

Webster, NH 03303

Archived: Wednesday, April 7, 2021 12:44:53 PM
From: Josh Yokela
Sent: Thursday, February 11, 2021 9:56:41 AM
To: ~House Executive Departments and Administration
Subject: HB85 - RE: Atlantic Time Zone
Importance: Normal
Attachments:
[Special_Commission_Commonwealths_Time_Zone.pdf](#) 

Hello Executive Departments and Administration Committee,

In testimonies you hear today on HB85, you may hear about the MA Special Commission's Report on time zones, and I wanted to make sure you had a copy of that report at your fingertips, so I have attached that for you.

Thanks,

Hon. Josh Yokela
www.JoshYokelaForNH.com
603-722-0501

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Tori Haring-Smith](#)

Sent: Thursday, February 11, 2021 10:26:00 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

I am opposed to this bill. First it ignores research showing the systemic racism is a public health crisis. No one denies this fact. Second, it misreads the history of Lincoln and Douglas, which I have studied for many years. Douglas believed the white supremacy was moral and Black had no right to participate in this country's governance. Thirds, even more importantly, the bill assumes that to discuss or study something is a dangerous idea. On the contrary, only through exploration and discussion of an idea can its merits be understood and solutions to problems advanced. This bill says "the problem is not there and so looking for it is dangerous." Nonsense. Finally, I invite all the white middle class or upper class men who want to support this bill to examine the fact that, from their positions of privilege, they have NO idea what "unconscious bias is" because they have never been the object of it. MY question: What are you afraid of? This bill is just like the actions of the Afghan government that believe educating girls is dangerous. Educating ourselves is the path to freedom.

Dr. Tori Haring-Smith
Peterborough, NH

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Rebecca Perlstein](#)

Sent: Thursday, February 11, 2021 11:00:49 AM

To: ~House Executive Departments and Administration

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Dear House Committee,

I oppose HB 544 because this law as proposed is ill-conceived. Suppressing meaningful discussion about how our racist and sexist history continues to impact people of color, women, indigenous populations, religious minorities, and the LGBTQ community, guarantees that our state and country will stagnate in a cesspool of inequality due to a lack of understanding of how embedded racism and bigotry negatively impact children and adult perceptions of others. It also fails to recognize that these perceptions translate into damaging laws such as proposed by HB544 that will perpetuate racism and inherent cultural bias.

We can only move forward by learning from our mistakes, educating ourselves, and being honest about how our state and federal attitudes and policies have negatively impacted Black people and other minority groups. Rather than suppressing discussion, and making it illegal to talk about how our country struggles with racism and cultural bias, I suggest writing a new bill that promotes honest and open discussion that results in meaningful, positive laws that support people who have been historically injured by our state and national policies.

Thank you for taking time to read this email. I ask you again to please vote NO on HB544"

Sincerely,

Rebecca Perlstein

Sent from my iPad

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: Mary Jo Brown

Sent: Thursday, February 11, 2021 11:47:20 AM

To: ~House Executive Departments and Administration

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

To the Committee on Executive Departments and Administration:

I am opposed to HB 544 and believe it would be extremely counter productive to creating better dialog and healthier, equitable communities in the Granite State.

As a 30 year business owner from Portsmouth, and long time New Hampshire citizen, I believe this bill would not be good for New Hampshire.

Respectfully submitted,

Mary Jo Brown
Founder & President
Brown & Company Design

Mary Johanna Brown

brown & company **design**
801 islington st #35
portsmouth, nh 03801

tel 603 436 5239 | fax 603 436 1363

www.browndesign.com

Executive Departments and Administration

Testimony

February 11, 2021

HB 606 - AN ACT exempting services provided without remuneration from license requirements for barbering, cosmetology, and esthetics.

Dear Madam Chair and Members of the Committee:

My name is Vincent Baiocchetti and I am a Barber, licensed in the State of New Hampshire and I am here to testify in **opposition** to HB606 which would exempt services provided without remuneration from license requirements for barbering, cosmetology, and esthetics.

I believe I understand the intent of this bill is to maybe allow immediate family members to perform services on their own family members; such as parents giving their children haircuts. While I certainly agree with this, what I see is that this bill, the way it is written, allows people without licenses or education, to perform services on people who are not related to them.

This is not a money issue, there is plenty of work to go around, I would caution you that this is a safety and sanitation issue.

A licensed Barber, Cosmetologist or Esthetician must go through an approved course or apprenticeship. In our training, besides learning how to provide services, we must also learn and are tested on, sanitation, chemistry, anatomy and physiology, as well as issues with, and disease of, the scalp, skin, etc. Some of the topics that we learn are hair diseases that are primarily associated with the follicles of the hair and scalp, head lice, dermatitis, how to properly mix chemicals so the hair and head of a person is not burned or scarred, alopecia, folliculitis, just to name a few.

We all learn sanitation procedures because we want to prevent the spread of diseases such as HIV, hepatitis, staph infections, folliculitis (also known as Barber's Itch), tinea capitis, a fungal infection, impetigo, a bacterial infection, lice, tetanus, again, just to name a few.

I am a traveling Barber, most of my clients are in medical facilities, correctional facilities or are elderly or infirmed and unable to leave their house, this kind of service is allowed by law. The difference between myself and someone who is not trained and licensed, is that I have not only the proper equipment to cut hair, shave faces and perform the services that I am allowed to and was trained for, but my instruments, combs and other equipment are properly cleaned and sanitized after every service, helping to prevent the spread of disease or causing illness or injury to my clients.

What I would suggest is that this bill be changed to allow these services to be provided by and to immediate family members only. I have seen and know people that will provide services to others and not accept any "renumeration", to follow the law, but will be compensated in other methods so as to claim that they are not being paid for the services that they provide. I see this as a way to circumvent the law and is similar to past bills that have been sponsored to do away with licensing for the services that we currently provide.

This is not about cutting hair because in all honesty, I have seen people that are not licensed give great services and licensed people give terrible services. But all of the licensed professionals are educated and tested on the real important part of performing these services; preventing their clients from becoming ill or severely injured.

If you want to allow Mom and Dad to cut their kid's (or each other's hair), take some box coloring and do their hair or paint their fingernails, I as a trained professional have no issues with that. It is the allowing of unlicensed people to cut/color individual's hair, wax and put chemicals on people's skin and scalp with no education or training in the proper application and safety of the service.

I would ask that you oppose this bill as written and vote it ITL.

Thank you for your time and attention in this matter.

Sincerely,

/s/

Vincent Baiocchetti

Archived: Wednesday, April 7, 2021 1:28:33 PM

From: [Jean](#)

Sent: Monday, February 15, 2021 10:08:36 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

I call on all members of this committee to strenuously oppose a bill that limits speech so egregiously and dangerously as HB544 does. The idea that government would label whole categories of information or subject matter off-limits when it comes to training, grants, and contracts is both reprehensible and a magnet for an enormous range of lawsuits, both on constitutional and workforce matters.

As someone who has experienced discrimination in the workplace and also advocated for people very likely to experience workplace discrimination based on disability, gender identity, sexual orientation, and race, I assure you all that information and education do not divide. They illuminate and brings those who otherwise couldn't work together, into the workforce together, safely and equitably.

Sincerely,

Jean Lewandowski
Nashua Ward 5

Sent from [Mail](#) for Windows 10

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Lynn Clowes](#)

Sent: Monday, February 8, 2021 12:41:25 PM

To: ~[House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Dear Committee Members,

The bill NH HB544, to my research, appears to be non helpful to NH.

I believe that it contradicts core public health findings; that it promotes a narrative that portrays addressing racism as dangerous (in contrast I believe we —as a society-- gain a lot when we acknowledge and address racism); the bill is also not in line with historic findings; and the bill is vague and could be used to delegitimize potential future training on race or equity or related issues.

Please do not turn this bill into law in NH. It will not help us become a more competitive workforce in this global economy. It will be a step in the wrong direction.

Sincerely,
Lynn Clowes
Warner NH

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Godwin, James](#)

Sent: Tuesday, February 9, 2021 7:42:04 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Is there a way to make it open for the public to analyze and debate critical race theory itself?
More specifically to debate the topic on college campuses?

Get [Outlook for Android](#)

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [scott](#)

Sent: Tuesday, February 9, 2021 3:04:30 PM

To: [~House Executive Departments and Administration](#)

Subject: HB85 - NH Association of Broadcasters Letter to House Members

Importance: Normal

Attachments:


[NHAB - 2021 - Letter Opposing HB 85 Time Zone Bill.docx](#) 

Good afternoon,

Attached is a letter from the NHAB Executive Directors to members of the committee regarding opposition to HB85.

Regards,

Scott Spradling

Archived: Wednesday, April 7, 2021 12:44:53 PM
From: Jay Pea
Sent: Tuesday, February 9, 2021 10:07:41 PM
To: ~House Executive Departments and Administration
Subject: HB-85: Oppose—Amend to permanent Eastern Standard Time
Importance: Normal
Attachments:
[Save Standard Time to NH Cmte.pdf](#) 


Dear Honorable Legislators,

Please find attached a letter in opposition to HB-85. Please stop this bill, refer it to the Committees on Health, Children, and Education, and recommend its amendment to permanent Eastern Standard Time. I would be glad to provide expert statements against this bill's planned policy from the scientific health community, and to provide verbal testimony.

Sincerely,

Jay Pea
Save Standard Time
SaveStandardTime.com
[Twitter.com/SaveStandard](https://twitter.com/SaveStandard)

[LinkedIn.com/in/SaveStandard](https://www.linkedin.com/in/SaveStandard)
+1-415-484-3458

Archived: Wednesday, April 7, 2021 12:44:53 PM
From: Sara K. Giroux
Sent: Wednesday, February 10, 2021 12:17:56 PM
To: ~House Executive Departments and Administration
Cc: Paul A. Worsowicz
Subject: HB 85
Importance: Normal
Attachments:
[Motion Picture Association Testimony on HB 85.pdf](#) 

Dear Honorable Members of the House Executive Departments and Administration Committee,

On behalf of Motion Picture Association, Inc. please find attached testimony in opposition to HB 85, relative to using Atlantic Standard Time in New Hampshire.

Should you have any questions, please do not hesitate to contact Paul Worsowicz, registered lobbyist for Motion Picture Association, Inc. at worsowicz@gcglaw.com or (603) 491-8346.

Sincerely,
Sara Giroux

Sara Giroux, Government Relations Coordinator
Gallagher, Callahan & Gartrell, P.C.
214 North Main Street
Concord, NH 03301
(603) 545-3602
<http://www.gcglaw.com>

NOTICE REGARDING PRIVILEGED COMMUNICATION - The information contained in this electronic message is intended only for the addressee named above. The contents of this electronic message are or may be protected by the attorney-client privilege, work product doctrine, joint defense privileges, trade secret protections, and/or other applicable protections from disclosure. If the reader of this message is not the intended recipient, you are hereby notified that any use, dissemination, distribution or reproduction of this communication is strictly prohibited. If you are not the intended recipient, please contact the sender and delete all copies.

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Kyle Reynolds](#)

Sent: Wednesday, February 10, 2021 1:09:16 PM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

It may be divisive, but implicit bias has been shown conclusively to have a real and powerful effect on almost all aspects of our lives: our education, psychological development, personal and professional growth, the list includes just about any sphere where the brain is employed. Implicit bias is not a trendy theory or conceptual understanding of reality... it is foundational to the way our brains develop and understand a very complex world for which we do not have complete information. Our brain must fill in blank spots, and it will fill it with whatever understanding it can rectify with other beliefs, whether those beliefs have empirical evidence or not.

This bill is itself a form of bias. It seeks to disregard truth in favor of a status quo those in power would like to hold.

The sponsors of this bill are either woefully ignorant or willingly ignoring the truth of our humanity.

Please do the right thing and oppose this bill.

Kyle Reynolds
3 Knoll Road
Wolfeboro, NH 03894

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Vinnie Baiocchetti](#)

Sent: Wednesday, February 10, 2021 8:22:27 PM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Attachments: [2021 HB 606 Executive Departments and Administration.docx](#) ;

Thank you for considering my testimony, I appreciate the ability to testify.

Please feel free to contact me if you have any questions.

Vinnie Baiocchetti
Gilmanton Iron Works, NH

Archived: Wednesday, April 7, 2021 12:44:53 PM


From: [Scherr, Albert](#)

Sent: Wednesday, February 10, 2021 8:03:46 PM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Attachments: [Statement by Albert Scherr before the House ED & A Committee \(2-11-21\).docx](#) 
;

Attached is my testimony on HB 499

Best,

Albert (Buzz) Scherr
Professor of Law
UNH School of Law
Concord, NH 03301
cell:603-828-6515

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Tom Emswiler](#)

Sent: Thursday, February 11, 2021 9:17:46 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Attachments:

[Special_Commission_Commonwealths_Time_Zone.pdf](#) 

Hello, please see my prepared testimony below. I've also attached the Mass. Special Commission report to this email.

Thanks,
Tom Emswiler

HB85 - relative to using Atlantic Standard Time in New Hampshire
Statement of Tom Emswiler from Quincy, Massachusetts

February 11, 2021

Good morning; I'm Tom Emswiler from Quincy, Massachusetts and I'm here to ask for your support of HB85, which would extend New Hampshire's observance of summer time from 8 months a year to year-round. This regional move is supported by the conclusion of a Special Commission on the Massachusetts Time Zone from November 2017.

My involvement in this issue began in 2014 when I penned a *Boston Globe* op-ed titled "Why Mass. should defect from its time zone." The column became a top-read article in the *Globe* for several days after it was published. Realizing I might have a workable idea on my hands, I contacted Massachusetts Senator John Keenan's office and introduced a bill by-request to convene a commission to study the idea. This is usually where the story ends; my understanding is that bills by-request rarely go anywhere.

So you can imagine my surprise when I learned the bill was added to the 2016 economic development bill. Before I knew it my little bill-that-could was a law. I was nominated to serve on the Commission, and we met throughout 2017. Our report was issued about three and a half years ago.

By a vote of 9-1 the Commission endorsed a careful, deliberate, regional move of Massachusetts and other states to observe Atlantic Standard Time year-round, effectively the same as having daylight saving time all year. For 8 months a year,

there would be no change. HB85 would have our states join together to petition the U.S. Department of Transportation to allow us all to move to Atlantic Standard Time.

The executive summary of our report is only three pages and I encourage you to read it. Our commission found that Atlantic Standard Time could encourage residents to dine out and shop more. Extra daylight could also save energy and reduce greenhouse gas emissions without the need for artificial light. Eliminating the spring forward change could reduce heart attacks, car accidents, workplace accidents, and cyber-loafing.

Finally, I want to address school start times. It's true that if we adopt this change in a vacuum, we'd have kids walking to school in the dark. My wife and I have two children in elementary school. I would never suggest making a change that puts them or other children in harm's way.

We learned that pediatric sleep experts, including Dr. Judith Owens of Boston Children's Hospital who served on this commission, recommend that school not start until 8:30 a.m., well after an Atlantic Standard Time sunrise.

I appreciate the Committee holding this hearing and for the opportunity to testify. Our commission met throughout 2017, studied the issue, and recommended that we make this change. HB85 would be that change. Thank you and I'm happy to take any questions.

<The report can be found at this link below and attached to this email.>

<https://malegislature.gov/Search?SearchTerms=commonwealth+time+zone+report>

###

--

Tom Emswiler
tomems@gmail.com
(202) 270-6839

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Nancy Rideout](#)

Sent: Thursday, February 11, 2021 9:54:58 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration


Importance: Normal

NH House of Representatives should be ASHAMED of themselves for even considering such a bill as this.

Nancy Rideout

6 Bashan Hollow Road

Webster, NH 03303

Archived: Wednesday, April 7, 2021 12:44:53 PM
From: Josh Yokela
Sent: Thursday, February 11, 2021 9:56:41 AM
To: ~House Executive Departments and Administration
Subject: HB85 - RE: Atlantic Time Zone
Importance: Normal
Attachments:
[Special_Commission_Commonwealths_Time_Zone.pdf](#) 

Hello Executive Departments and Administration Committee,

In testimonies you hear today on HB85, you may hear about the MA Special Commission's Report on time zones, and I wanted to make sure you had a copy of that report at your fingertips, so I have attached that for you.

Thanks,

Hon. Josh Yokela
www.JoshYokelaForNH.com
603-722-0501

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Tori Haring-Smith](#)

Sent: Thursday, February 11, 2021 10:26:00 AM

To: [~House Executive Departments and Administration](#)

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

I am opposed to this bill. First it ignores research showing the systemic racism is a public health crisis. No one denies this fact. Second, it misreads the history of Lincoln and Douglas, which I have studied for many years. Douglas believed the white supremacy was moral and Black had no right to participate in this country's governance. Thirds, even more importantly, the bill assumes that to discuss or study something is a dangerous idea. On the contrary, only through exploration and discussion of an idea can its merits be understood and solutions to problems advanced. This bill says "the problem is not there and so looking for it is dangerous." Nonsense. Finally, I invite all the white middle class or upper class men who want to support this bill to examine the fact that, from their positions of privilege, they have NO idea what "unconscious bias is" because they have never been the object of it. MY question: What are you afraid of? This bill is just like the actions of the Afghan government that believe educating girls is dangerous. Educating ourselves is the path to freedom.

Dr. Tori Haring-Smith
Peterborough, NH

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: [Rebecca Perlstein](#)

Sent: Thursday, February 11, 2021 11:00:49 AM

To: ~House Executive Departments and Administration

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

Dear House Committee,

I oppose HB 544 because this law as proposed is ill-conceived. Suppressing meaningful discussion about how our racist and sexist history continues to impact people of color, women, indigenous populations, religious minorities, and the LGBTQ community, guarantees that our state and country will stagnate in a cesspool of inequality due to a lack of understanding of how embedded racism and bigotry negatively impact children and adult perceptions of others. It also fails to recognize that these perceptions translate into damaging laws such as proposed by HB544 that will perpetuate racism and inherent cultural bias.

We can only move forward by learning from our mistakes, educating ourselves, and being honest about how our state and federal attitudes and policies have negatively impacted Black people and other minority groups. Rather than suppressing discussion, and making it illegal to talk about how our country struggles with racism and cultural bias, I suggest writing a new bill that promotes honest and open discussion that results in meaningful, positive laws that support people who have been historically injured by our state and national policies.

Thank you for taking time to read this email. I ask you again to please vote NO on HB544"

Sincerely,

Rebecca Perlstein

Sent from my iPad

Archived: Wednesday, April 7, 2021 12:44:53 PM

From: Mary Jo Brown

Sent: Thursday, February 11, 2021 11:47:20 AM

To: ~House Executive Departments and Administration

Subject: NH House Remote Testify: 10:00 am - HB85 in House Executive Departments and Administration

Importance: Normal

To the Committee on Executive Departments and Administration:

I am opposed to HB 544 and believe it would be extremely counter productive to creating better dialog and healthier, equitable communities in the Granite State.

As a 30 year business owner from Portsmouth, and long time New Hampshire citizen, I believe this bill would not be good for New Hampshire.

Respectfully submitted,

Mary Jo Brown
Founder & President
Brown & Company Design

Mary Johanna Brown

brown & company **design**
801 islington st #35
portsmouth, nh 03801

tel 603 436 5239 | fax 603 436 1363

www.browndesign.com

Bill as Introduced

HB 85 - AS INTRODUCED

2021 SESSION

21-0211

05/08

HOUSE BILL **85**

AN ACT relative to using Atlantic Standard Time in New Hampshire.

SPONSORS: Rep. Yokela, Rock. 33; Rep. Yakubovich, Merr. 24; Rep. A. Lekas, Hills. 37; Rep. Schultz, Merr. 18; Rep. Hill, Merr. 3

COMMITTEE: Executive Departments and Administration

ANALYSIS

This bill provides that New Hampshire will use Atlantic Standard Time throughout the calendar year if Massachusetts and Maine also move to Atlantic Standard Time.

Explanation: Matter added to current law appears in ***bold italics***.
 Matter removed from current law appears ~~[in brackets and struckthrough]~~
 Matter which is either (a) all new or (b) repealed and reenacted appears in regular type.

STATE OF NEW HAMPSHIRE

In the Year of Our Lord Two Thousand Twenty One

AN ACT relative to using Atlantic Standard Time in New Hampshire.

Be it Enacted by the Senate and House of Representatives in General Court convened:

1 1 Standard Time; Change to Atlantic Standard Time. Amend RSA 21:36 to read as follows:
2 21:36 Standard Time. The standard time within the state, except as hereinafter provided, shall
3 be ~~[based on the mean astronomical time of the seventy-fifth degree of longitude west from~~
4 ~~Greenwich, known and designated by the federal statute as "Eastern Standard Time." At 2 o'clock~~
5 ~~ante meridian of the second Sunday in March of each year, the standard time in this state shall be~~
6 ~~advanced one hour, at 2 o'clock ante meridian of the first Sunday in November of each year, the~~
7 ~~standard time in this state shall, by the retarding of one hour, be made to coincide with the~~
8 ~~astronomical time hereinbefore described as Eastern Standard Time, so that between the second~~
9 ~~Sunday in March at 2 o'clock ante meridian and the first Sunday in November at 2 o'clock ante-~~
10 ~~meridian in each year the standard time in this state shall be one hour in advance of the United~~
11 ~~States Standard Time]~~ ***known and designated by the federal statute as Atlantic Standard***
12 ***Time.*** In all laws, statutes, orders, decrees, rules, and regulations relating to the time of
13 performance by any officer or department of this state, or of any county, city, town, or district
14 thereof, or relating to the time in which any rights accrue or determine, or within which any act
15 shall or shall not be performed by any person subject to the jurisdiction of this state, or of any
16 county, city, town, or district thereof, and in all contracts or choses in action made or to be performed
17 in this state, it shall be understood and intended that the time shall be as set forth in this section.

18 2 Application to the United States Department of Transportation. Within 180 days of the
19 adoption of similar legislation by the states of Maine and Massachusetts, or on the date specified for
20 similar action by either the state of Maine or Massachusetts, whichever is earlier, the governor shall
21 petition the United States Secretary of Transportation to move the state of New Hampshire to the
22 Atlantic Time Zone.

23 3 Contingency. Section 1 of this act shall take effect on the first July 1 after section 2 takes
24 effect or the effective date specified by similar action by either the state of Maine or Massachusetts,
25 whichever is earlier. Section 2 of this act shall take effect on the date that the states of
26 Massachusetts and Maine enact similar legislation moving from the Eastern Time Zone to the
27 Atlantic Time Zone. If Massachusetts and Maine do not adopt such legislation, sections 1 and 2 of
28 this act shall not take effect.

29 4 Effective Date.

30 I. Sections 1 and 2 of this act shall take effect as provided in section 3 of this act.

31 II. The remainder of this act shall take effect 60 days after its passage.