



SLEEP AND SCHOOL START TIME FORUMS

**December 13, 2018
January 8, 2019**

MEETING OVERVIEW



- **6:30 PM Welcome**
- **6:35 PM Summary of the Committee's Work**
- **6:55 PM Panel Discussion – Questions**
- **7:40 PM Table Discussion**
- **7:55 PM Wrap-up**
- **8:00 PM Time for an Informal Conversation**
- **8:30 PM Have a Wonderful Evening**

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COMMITTEE CHARGE — SLEEP / SCHOOL START



- Research the topic of adolescent sleep
- Further study the research on adolescent sleep and explore the overarching challenges of changing the school start and end schedule with a goal of increasing adolescent sleep
- By November 2018, the committee is to recommend options to the Board for a later HS/MS start time

SCIENCE OF SLEEP - SLEEP NEEDS



As we age, our sleep needs change:



Toddler
1-2
years

11-14
hours



Preschooler
3-5
years

10-13
hours



School age
6-13
years

9-11
hours



Teen
14-17
years

8-10
hours



Adult
26 -64
years

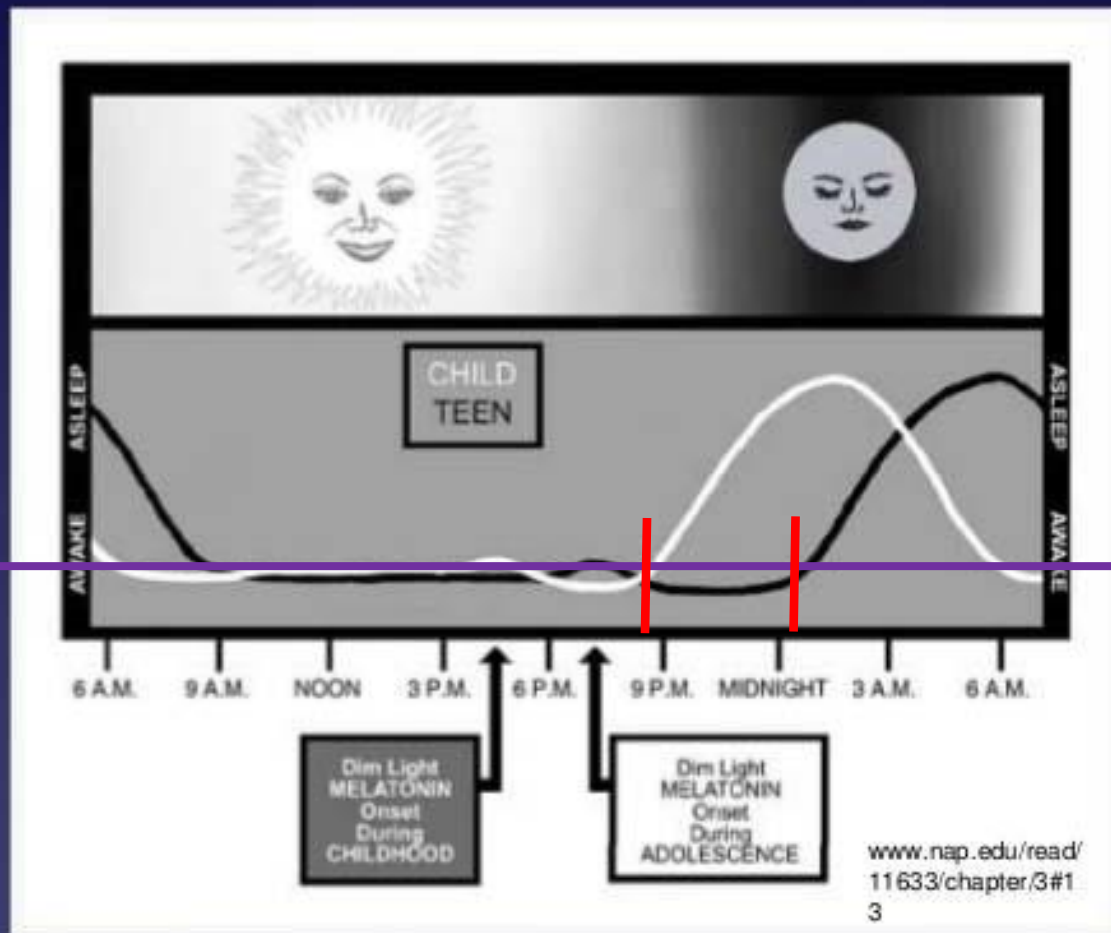
7-9
hours

Dr. Wendy Troxel, March 2018

- Elementary students need 9 to 11 hours of sleep
- Some older elementary students begin to move towards adolescent sleep patterns
- Little data exists regarding school start / end time for elementary aged students
- In general, the literature does not address sleep deprivation in elementary aged students
- The circadian rhythm of elementary students shows them falling asleep earlier and waking up earlier than their older counterparts

SCIENCE OF SLEEP

Sleep Shift – Child to Teen



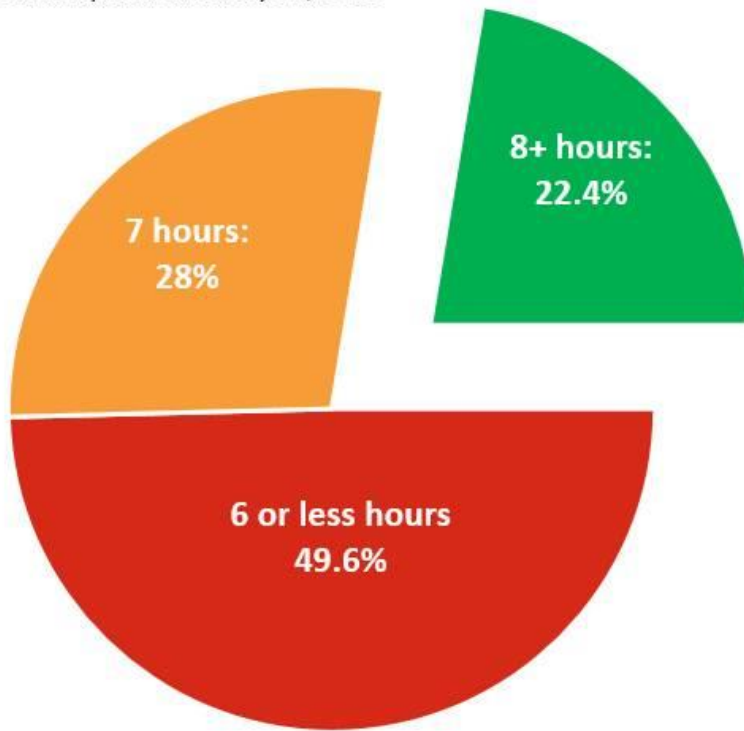
PASD DATA - HIGH SCHOOL STUDENTS



Only 22% of PAHS students get enough sleep each night

PAHS Students Report Average Hours of Sleep on School Nights

803 Students Participated in Survey 10/2018



Fact #1: Only 22% of PAHS students report sleeping 8 or more hours per night.

Fact #2: Teens biologically need 8.5-9.5 hours of sleep each night. (AAP)

Fact #3: Lack of sleep has been linked to lower levels of physical, emotional and mental health, less success in school, lessened productivity, and higher rates of physical injuries.

SCIENCE OF SLEEP - SLEEP CYCLES



Our Teens Need Sleep Quantity and Quality



Source: <http://www.end-your-sleep-deprivation.com/stages-of-sleep.html>

SCIENCE OF SLEEP - DEPRIVATION



Sleep Deprivation in Teens can lead to:

Behavioral/Psychological:

- Inappropriate emotional reactivity and extreme mood swings
- Increased risk of depression, anxiety, bipolar disorder and schizophrenia
- Aggression, bullying, violence
- Forgetfulness and an associated reduced ability to learn
- Decreased creativity, productivity and success in school
- Microsleep- a momentary lapse in concentration

Physical:

- Decreased motor coordination (leads to increased risk of sports injury and much higher risk of car crashes)
- Weight gain, obesity and diabetes
- Increased cortisol (stress hormone)
- Reduction or cessation of growth hormone production
- Weakened immune system

Source: American Academy of Pediatrics

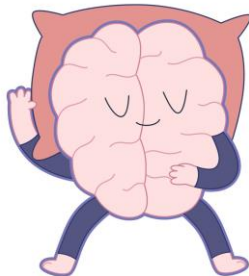
SCIENCE OF SLEEP - DEPRIVATION



Causes of Sleep Deprivation in Teens:

Biological Causes:

- Fighting Our Own Biology - **Circadian Rhythm Changes** in Teens and Adolescents
- Teen brains don't start producing melatonin (sleep hormone) until 10:45 p.m. & don't stop until 8 a.m.



Social Causes:

- Blue Light from Phone & Screen Use Less Than 2 hrs Before Bed
- Technology Notifications Disrupt Solid Sleep
- After- School Commitments
- Early School Start Times - The Single Largest Factor in Sleep Loss Controlled by the School



SCIENCE OF SLEEP - TEENS VS ADULTS



Teens have different Circadian Rhythms than adults:

Sleepy at 9 PM
(generally)



Adult

School-age child
(most alert early a.m.)

Sleepy at 11 PM
(generally)



Teen
(least alert early a.m.)

Dr. Wendy Troxel, March 2018

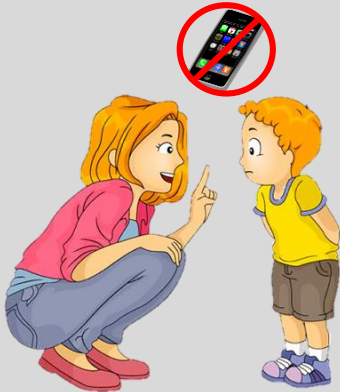
SCIENCE OF SLEEP - SLEEP QUALITY



Sleep Quality: We all have a role to play!

Parents:

Teach value of sleep!
Enforce bedtimes!
Remove tech!



Students:

Switch off your tech!
No caffeine after 4 p.m.!
Go to bed on time!

Schools:

Ensure quality
homework!
Teach value of sleep!
Start school later!



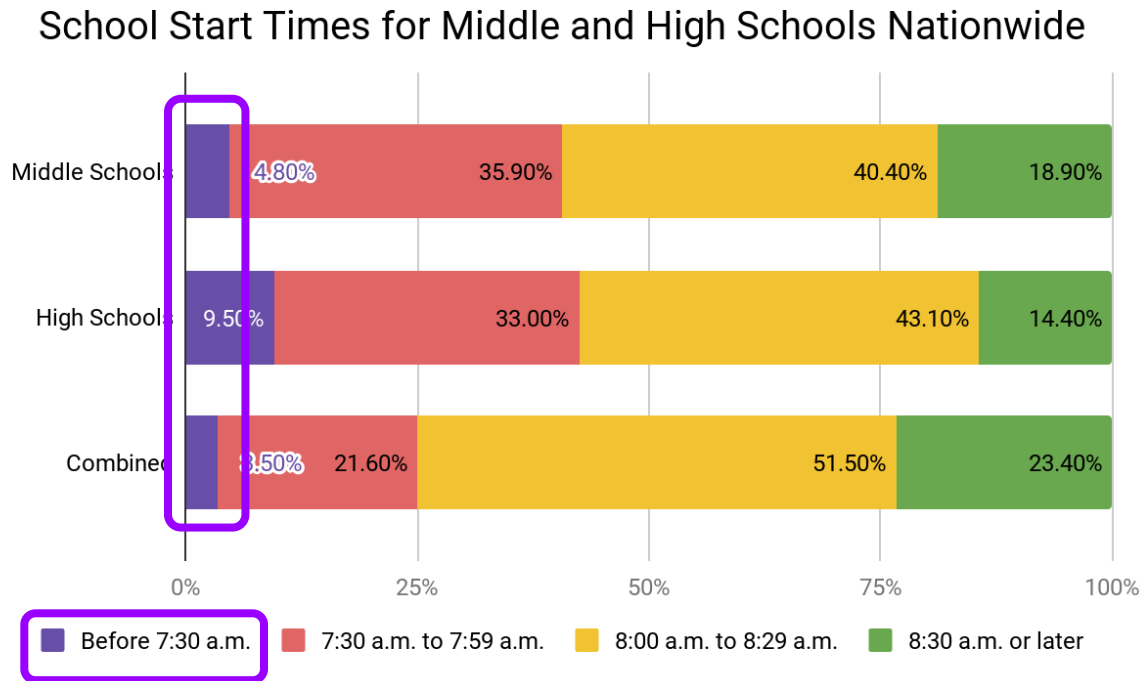
SCHOOL STARTS - NATIONWIDE



School Start Times Nationwide - We are the outlier!

Facts:

- 1) The CDC, AMA, and AAP all recommend a start time **no earlier than 8:30am**.
- 2) The national average start time is 8:03am.
- 3) Our current start times of 7:24am(HS) & 7:28am(MS) are solidly within **the purple section** on this chart.



Source: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6431a8.htm?s_cid=mm6431a8_w

CHANGING SCHOOL START TIMES



Changes like this can seem daunting, even impossible.

The fact is, it is not impossible.

More and more districts each year are investigating this possibility and choosing to shift their School Start Times later for the health and safety of their student body.

In 2017, Unionville - Chadds Ford School District spearheaded this movement in Chester County by moving their start times from 7:35 a.m. to 8:00 a.m.

They have already seen positive results.

UNIONVILLE - CHADDS FORD FINDINGS



7:35 a.m. School Start pushed to 8:00 a.m. in Fall 2017

- ⦿ 8 a.m. start times were implemented without disrupting sports practices or games
- ⦿ Students are reporting they are feeling **more rested**
- ⦿ Teachers are reporting that students are **more attentive** during first period classes
- ⦿ Students appear noticeably more **upbeat** and **positive** upon arrival at school
- ⦿ Encouraging consideration of 8:30 a.m. start time--**after all was said and done, they wish they had pushed for an even later start time**

SEATTLE SCHOOL DISTRICT FINDINGS



Dec 12, 2018 - Seattle school districts published official results of a year long study of their school start time change from 7:50 a.m. to 8:45 a.m.:

- ◎ Students sleep an average of 34 minutes longer each night
- ◎ Tardiness was reduced
- ◎ Attendance was improved
- ◎ Median grade increase of 4.5% (this often meant the difference between a B and an A, or a C and a B)
- ◎ Teachers: “The difference was striking”

When it comes to sleep, every minute counts!

[Link to full article here](#)



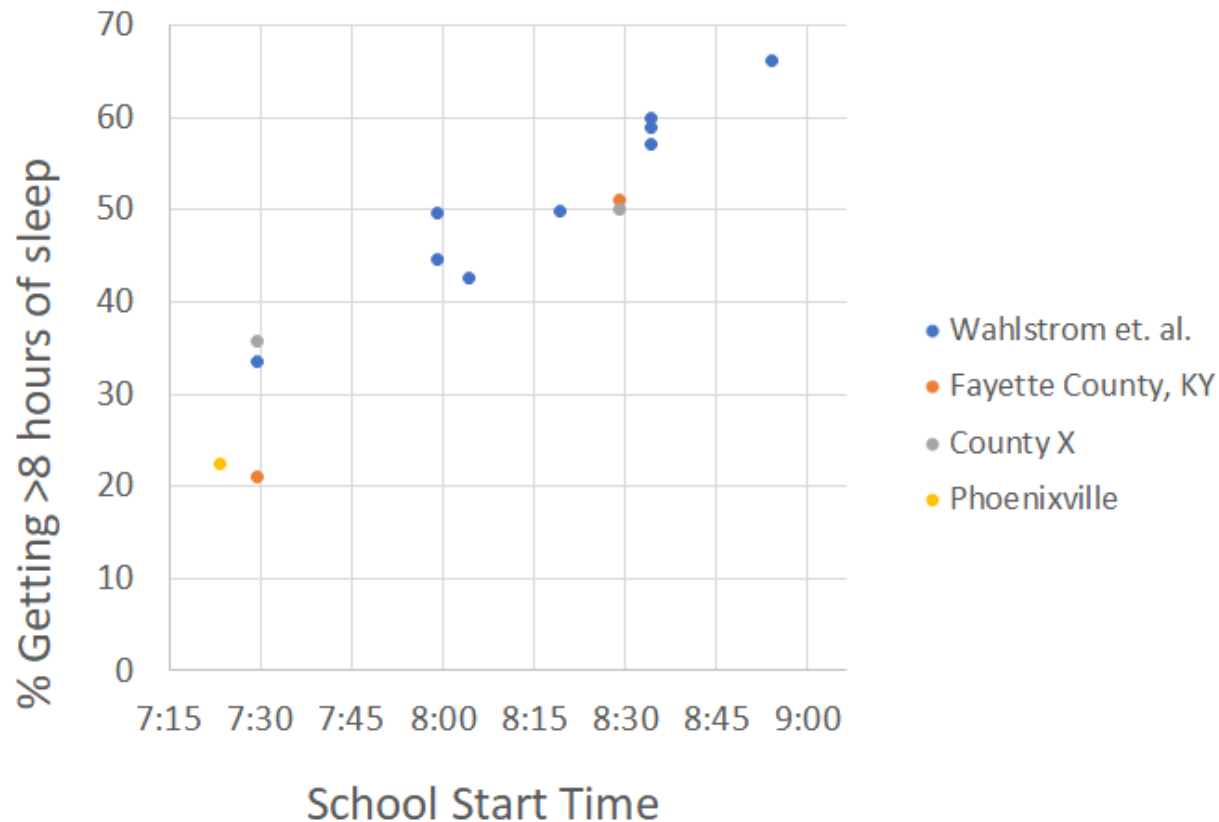
Myths and Facts About Changing School Start Times

MYTH #1



Myth: “If school starts later, kids will just stay up later.”

Fact: Later start times = more students getting more sleep.



MYTH #2



Myth: “We’re coddling the kids, not preparing them for Real Life.”

Facts:

- 1) The circadian rhythm changes seen in adolescence **gradually shift back in adulthood** (between the ages of 20-65), when “Real Life” schedules begin.
- 2) **Waking an adolescent at 6 a.m. is roughly equivalent (in sleep cycle disruption) to waking an adult at 4 a.m.**
- 3) It is our responsibility to teach our children how to **make healthy choices** in life, and **modeling** this behavior is key.

SCIENCE OF SLEEP



**PLEASE VISIT THE PASD WEBSITE FOR
MORE INFORMATION ON THE SCIENCE OF
SLEEP AND INFORMATION ABOUT
SCHOOL START TIMES**

http://www.pasd.com/community/sleep_exploration

GENERAL BUS PICK-UP SCHEDULE

Minutes Prior to Start of School	Percent of Students Picked-up Middle & High Schools	Percent of Students Picked-up Elementary School
50 to 60 minutes prior	1%	0%
40 to 50 minutes prior	2.7%	1%
30 to 40 minutes prior	13.2%	7.5%
20 to 30 minutes prior	38.2%	24.4%
10 to 20 minutes prior	35.6%	41.6%
0 to 10 minutes prior	9.4%	25.4%

OPTION 1 – CONCURRENT START – K TO 12 BUS

Start	End
HS and MS Start – 8:20 AM (60 min later) Earliest bus pick-up – 7:30 AM Teachers start – 8:10 AM Bus drop-off goal – 8:15 AM	HS and MS End – 3:30 PM* (55 min later) Bus departure goal – 3:35 PM Teacher end – 3:40 PM Latest bus drop off – 4:20 PM
Elementary Start – 8:35 AM (5 min later) Earliest bus pick-up – 7:30 AM Teacher start – 8:05 AM Bus drop-off goal – 8:25 AM	Elementary End – 3:15 PM (same time) Bus departure goal – 3:25 PM Teacher end – 3:35 PM Latest bus drop off – 4:20 PM
Additional bus cost – approx. \$1,250,000	*HS/MS day shortened by 5 minutes

OPTION 2 – FLIP SCHEDULE (EXAMPLE TIMES)

Start	End
HS and MS Start – 8:35 AM (75 min later) Earliest bus pick-up – 7:35 AM Teachers start – 8:20 AM Bus drop-off goal – 8:30 AM	HS and MS End – 3:45 PM* (70 min later) Bus departure goal – 3:50 PM Teacher end – 3:50 PM Latest bus drop off – 4:40 PM
Elementary Start – 7:45 AM (45 min early) Earliest bus pick-up – 6:55 AM Teacher start – 7:15 AM Bus drop-off goal – 7:40 AM	Elementary End – 2:30 PM (45 min early) Bus departure goal – 2:40 PM Teacher end – 2:45 PM Latest bus drop off – 3:30 PM
Additional bus cost – approx. \$300,000	*HS/MS day shortened by 5 minutes

OPTION 3 – PUSH THE TIME FOR ALL (EXAMPLE TIMES)



Start	End
HS and MS Start – 8:05 AM (40 min later) Earliest bus pick-up – 7:00 AM Teachers start – 7:50 AM Bus drop-off goal – 7:55 AM	HS and MS End – 3:15 PM* (35 min later) Bus departure goal – 3:18 PM Teacher end – 3:20 PM Latest bus drop off – 3:55 PM
Elementary Start – 9:05 AM (35 min later) Earliest bus pick-up – 8:10 AM Teacher start – 8:35 AM Bus drop-off goal – 9:00 AM	Elementary End – 4:00 PM (35 min later) Bus departure goal – 4:04 PM Teacher end – 4:05 PM Latest bus drop off – 5:00 PM
Additional bus cost – approx. \$300,000	*HS/MS day shortened by 5 minutes

OPTION 4 – KEEP CURRENT SCHEDULE

Start	End
<p>HS and MS Start – 7:20 AM</p> <p>Earliest bus pick-up – 6:20 AM</p> <p>Teachers start – 7:10 AM</p> <p>Bus drop-off goal – 7:15 AM</p>	<p>HS and MS End – 2:35 PM</p> <p>Bus departure goal – 2:40 PM</p> <p>Teacher end – 2:40 PM</p> <p>Latest bus drop off – 3:20 PM</p>
<p>Elementary Start – 8:30 AM</p> <p>Earliest bus pick-up – 7:40 AM</p> <p>Teacher start – 8:00 AM</p> <p>Bus drop-off goal – 8:25 AM</p>	<p>Elementary End – 3:15 PM</p> <p>Bus departure goal – 3:25 PM</p> <p>Teacher end – 3:30 PM</p> <p>Latest bus drop off – 4:15 PM</p>
No anticipated increase in bus costs.	

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DISCUSSION QUESTIONS



**Please submit your questions to the panel
on the index cards located on your table**

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Please take a few minutes to:

- **Share and record key points you want the Board to know about sleep and school start/end time.**
- **For future for forums what recommendations do you have.**

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NEXT STEPS



- ◎ **January 10, 2019 – Board Workshop Meeting**
 - **Board will discuss the 4 Options**

- ◎ **January 17, 2019 – Board Meeting**
 - **Board will vote on School Start Time**

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Elementary

TIME	NUMBER OF STUDENTS	PROGRAM
7:30-8:30 (1X a wk. Varying days)	320	CHORUS (combined 3 schools)
7:30-8:30 (2X a wk.)	317	Band (SCH/B/MAN)
7:30-8:30 (1X a wk.)	280	Orchestra (SCH/B/MAN)

MUSIC PRACTICES

Middle School

<u>Select Chorus (All Year)</u> 1x week, 60-90 min after school (auditorium or music room)	<u>Fall Play (Sept-Nov)</u> 3-4x week, 2hr after school (auditorium)
<u>Spring Spectacular (January-April)</u> 3-4x week, 2 hr after school (auditorium)	<u>Select String Ensemble (All Year)</u> 1x week, 2 hr after school (music room)
<u>MS Jazz Band</u> Currently meet before school	<u>MS Wind Ensemble</u> Currently meet before school

MUSIC PRACTICES

High School

<u>Select Chorus (All Year)</u> 1x week, 90 minutes after school (auditorium or music room)	<u>Jazz Band (December-May)</u> 2x week, 90 minutes after school (auditorium or music room)
<u>Marching Band (Sept-Nov)</u> 2x week, 3 hours at night (6pm- 9pm) (lit field needed)	<u>Percussion Ensemble (Dec-April)</u> 2x week, 3 hours at night (6pm- 9pm) (gymnasium needed)
<u>Winter guard (Dec-April)</u> 2x week, 3 hours a night (6pm- 9pm) (gymnasium needed)	<u>Fall Play (Sept-November)</u> 4x week, 2 hours (auditorium needed)
<u>Musical (January-April)</u> 4x week, 2 hours (auditorium needed)	

CURRENT MIDDLE SCHOOL SPORTS (GAMES & PRACTICES)



Season	Sport	Bus Dep. for Games	Game Start	Game End	Practice Start	Practice End
Fall	Cross Country	2:30 PM	4:00 PM	5:00 PM	3:00 PM	4:30 PM
Fall	Field Hockey	2:30 PM	3:45 PM	5:45 PM	3:00 PM	4:30 PM
Fall	Football	2:30 PM	3:45 PM	5:30 PM	3:00 PM	4:30 PM
Fall	Soccer	2:30 PM	3:45 PM	5:45 PM	3:00 PM	4:30 PM
Fall	Volleyball	2:30 PM	3:45 PM	6:00 PM	3:00 PM	4:30 PM
Fall/Winter	Cheerleading	N/A	3:45 PM	5:30 PM	3:00 PM	4:30 PM
Spring/Fall	Tennis	2:30 PM	3:30 PM	5:30 PM	3:00 PM	4:30 PM
Winter	Basketball	2:30 PM	3:30 PM	5:30 PM	3:00 PM	4:30 PM
Winter	Wrestling	2:30 PM	3:30 PM	5:30 PM	3:00 PM	4:30 PM
Spring	Baseball	2:30 PM	3:45 PM	5:30 PM	3:00 PM	4:30 PM
Spring	Lacrosse	2:30 PM	3:45 PM	5:45 PM	3:00 PM	4:30 PM
Spring	Softball	2:30 PM	3:45 PM	5:30 PM	3:00 PM	4:30 PM
Spring	Track & Field	2:30 PM	3:30 PM	5:30 PM	3:00 PM	4:30 PM

CURRENT HIGH SCHOOL SPORTS (GAMES & PRACTICES)



Season	Sport	Bus Dep. for Games	Game Start	Game End	Practice Start	Practice End
Fall	Cross Country	2:00 PM	4:00 PM	5:00 PM	3:00 PM	5:00 PM
Fall	Field Hockey	2:20 PM	3:45 PM	6:30 PM	4:30 PM	6:30 PM
Fall	Football	4:30 PM	7:00 PM	9:30 PM	3:00 PM	5:30 PM
Fall	Soccer (B/G)	2:20 PM	4:00 PM	6:00 PM	3:00 PM/4:00	5:00 PM/6:30
Fall	Volleyball	2:20 PM	3:45 PM	6:00 PM	3:00 PM	5:30 PM
Fall	Golf	2:00 PM	3:00 PM	5:00 PM	3:00 PM	5:00 PM
Fall	Cheerleading	5:30 PM	7:00 PM	9:30 PM	3:30 PM	7:00 PM
Spring/Fall	Tennis	2:20 PM	3:30 PM	5:30 PM	3:00 PM	5:00 PM
Winter	Basketball	4:00 PM	5:30 PM	9:00 PM	4:30 PM	6:30 PM
Winter	Wrestling	4:00 PM	6:30 PM	8:30 PM	4:00 PM	6:00 PM
Winter	Competitive Spirit	N/A	N/A	N/A	3:30 PM	7:00 PM
Winter	Indoor Track	N/A	N/A	N/A	3:00 PM	5:00 PM
Winter	Swimming/Diving	2:20 PM	3:45 PM	5:30 PM	3:00 PM	4:30 PM
Spring	Baseball	2:20 PM	4:00 PM	6:00 PM	3:00 PM	5:30 PM
Spring	Lacrosse (B/G)	2:20 PM	3:45 PM	7:00 PM	3:00 PM/4:00	5:00 PM/6:30
Spring	Softball	2:20 PM	4:00 PM	6:00 PM	3:00 PM	5:00 PM
Spring	Track & Field	2:00 PM	3:15 PM	6:00 PM	3:45 PM	5:30 PM

CURRENT SCHEDULES OF HS/MS CLASSES

High School Schedule

Current	
Teachers arrive	7:10
Students arrive	7:20
Homeroom	7:24-7:30
Period 1	7:34 – 8:20
Period 2	8:24 – 9:10
Period 3	9:14 – 10:00
Period 4 (LUNCH)	10:04 – 10:50
Period 5 (LUNCH)	10:54 – 11:40
Period 6 (LUNCH)	11:44 – 12:30
Period 7 (LUNCH)	12:34 – 1:20
Period 8	1:24 – 2:10
PDT	2:15 – 2:40

Currently many HS sports buses leave for games at 2:20. Athletes participating in these sports miss 0 min. of instructional time on game days.

Middle School Schedule

Daily Time Schedule	
Faculty Arrives	7:10
Students Arrive	7:18
HR	7:28-7:33
Period 1	7:33-8:19
Period 2	8:22-9:08
Period 3	9:11-9:57
PD 4/RECAP	10:00-10:46
6th Grade	
Lunch	10:49 -11:19
Period 5	11:22-12:08
Period 6	12:11-12:57
7th Grade	
Period 5	10:49-11:35
Lunch	11:38-12:08
Period 6	12:11-12:57
8th Grade	
Period 5	10:49-11:35
Period 6	11:38-12:24
Lunch	12:27-12:57
Period 7	1:00-1:46
Period 8	1:49-2:35

Currently the MS sports buses leave for games at 2:30. Athletes miss approx. 15 min. of instructional time on game days.

SCIENCE OF SLEEP



Yearly Sun Graph for Phoenixville:
Hours of Daylight with Current School Start Times

