

To: Andover School Committee

Cc: Dr. Sheldon Berman, Superintendent

From: Sandra A. Trach, Assistant Superintendent for Teaching and Learning,  
Facilitator of the School Start Time Working Group, Facilitator of the School Start Time  
Parent Advisory Council

Date: June 19, 2020

R/e: School Start Times Summary Report 2020

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## **Preface**

Andover Public Schools is committed to supporting students' well-being and as a result, the district has invested extensively in curriculum, personnel, programs and professional development to support the physical health, mental health and academic performance of all students. As part of this, it is widely accepted that a developmentally appropriate amount of sleep is necessary for the well-being of students. To that end, the Andover School Committee created a goal as follows:

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*The superintendent will work with the assistant superintendent for teaching and learning and key stakeholders to refine potential options for later start times for secondary students and provide objective information concerning the benefits and drawbacks of various options to the School Committee to enable it to evaluate the feasibility of and receptivity to the potential options so that the School Committee can make an effective decision.*

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The rationale for the district's examination of school start times stems from the science on sleep for adolescents and their changing circadian rhythms during the middle and high school years. Medical and public health organizations have advised delayed school start times as a countermeasure to the shifted sleep pattern that biologically and developmentally occurs for adolescents at this time in their lives.

Andover is not alone in studying and considering a later school start time for adolescents. Many school communities in Massachusetts and nationwide are in the process of shifting—or have shifted—to later start times. Consideration of a change in school start times has been under discussion in Andover Public Schools since August 2018. This work was unexpectedly paused due to the rise of coronavirus followed by school district closure in March 2020. As the district anticipates reopening schools for the 2020-2021 school year and prepares for the FY22 budget process, it is important to summarize the status of the school start time goal in order to identify next steps in the process.

This report aims to provide a synopsis of the working group process, research on sleep for adolescents and elementary-aged students, Massachusetts schools that are examining a start time change or have shifted start times already, and Merrimack Valley school start and dismissal times. Additionally, the role of bell times, transportation, private schools, athletics, fine arts and child care are discussed. The report concludes with possible school start and dismissal time scenarios described in terms of benefits and drawbacks, as well as recommendations for potential next steps.

### **School Start Time Working Group | Goals | Guiding Principles**

In May 2018, discussion of school start times on adolescent health began with a presentation and feedback from Andover High School students. In the fall 2018, the Andover School Committee articulated goals and a set of guiding principles to help examine potential changes to start times. Shortly thereafter, the Superintendent established a School Start Time Working Group under the direction of Assistant Superintendent Sandra Trach to facilitate the team. The School Committee's overall goal has been to make a positive impact on student well-being, including emotional and physical health, as well as academic performance. The School Committee also advised

#### **Andover School Committee identified four goals for the Working Group:**

1. Develop potential options for later start times for secondary students;
2. Provide objective information to the School Committee as to the benefits and drawbacks of various options;
3. Provide wide stakeholder feedback to support the School Committee in evaluating the feasibility of and receptivity to potential options;
4. Develop a report on the feedback and proposed options for changing school start times.

## **SCHOOL START TIME WORKING GROUP**

### **Patrick Bucco**

Wood Hill Middle School  
Principal

### **Philip Conrad**

Andover High School Principal

### **Michelle Costa**

Bancroft Elementary Principal

### **Kerry Costello**

AEA President 2018-2019 |  
AEA Past President 2019-2020

### **Pamela Lathrop**

High Plain Elementary Principal  
| alternate elementary principal  
member

### **Nicole Kieser**

Director of Communication

### **Susan McCready**

Andover School Committee  
Member

### **Shannon Scully**

Andover School Committee  
Member

### **Paul Szymanski**

Assistant Superintendent for  
Finance and Operations

### **Sandra Trach**

Assistant Superintendent for  
Teaching and Learning |  
Facilitator of School Start Time  
Working Group | Facilitator of  
School Start Time Parent  
Advisory Group

### **Mary Lu Walsh**

APS Transportation  
Coordinator

consideration of the impact on family and staff schedules, extra-curricular activities, and costs to families and the district.

### **Andover School Committee developed and communicated six guiding principles as a way to support effective decision making.**

- Impact on student well-being (physical, mental health, and academic performance);
- Impact on family and staff schedules (work schedules, before/after school child care arrangements, homework);
- Impact on extra-curricular activities (athletics, drama, music, clubs) and after school jobs;
- Cost to families and district (transportation costs, before/after school child care costs);
- Consultation with AEA;
- Coordination with other Merrimack Valley communities.

### **Summary of the Process**

The Working Group met regularly as a team, held numerous public forums on start times, facilitated discussions with parents, and met with students (including PTO meetings and student government). The School Committee also held scheduled updates on their School Committee agendas and discussed school start times at public forums. A school start time [webpage](#) was created to post and share information.

In spring 2019, the Working Group issued surveys to multiple groups of stakeholders including [faculty and staff](#), [students](#), and [parents](#). These results were analyzed over the summer, provided extensive feedback, and [presented](#) and discussed with the School Committee at a September 2019 workshop.

In fall 2019, the School Committee approved a request from the administration to move forward with a Request for Proposal to contract with a transportation consultation firm. It was determined that [Education Logistics \[Edulog\]](#) would conduct an optimization study to assess existing transportation routes and analyze specific bell time scenarios for timely, efficient, and cost-effective transport of students to and from their residences. In November 2019, the School Committee and Working Group received the [Edulog Transportation Optimization study](#)—a thorough and careful analysis of potential bell time options within the defined parameters of the RFP. The School Committee also received input from parents, faculty and staff, students, and the public who expressed a wide range of views on whether or not, and if so—how school start times should be changed.

In January 2020, a School Start Time Parent Advisory Council (PAC) was formed comprised of parent delegates from the schools, special education and two Andover private schools. The PAC met several times under the facilitation of Sandra Trach, Assistant Superintendent, to provide input and feedback on potential school start time scenarios examined by Edulog.

In March 2020, the unexpected rise of coronavirus paused the school start time work and the district closed schools shortly thereafter on March 16, 2020. Since that point, the district focus has been entirely on the health, safety, education and well-being of students, staff and families related to COVID-19.

In June 2020, the School Start Time Working Group aims to share its findings through this report. It is important to note that these findings should be contextualized in a traditional school year model. Depending on the directives from the Massachusetts Commissioner of Education to schools for reopening in fall 2020, school start times may be need to be altered due to his guidance, in order to accommodate the health, safety and educational requirements set forth by the state.

## Sleep Research for Adolescents

In fall 2018, Andover Public Schools hosted Dr. Judith Owens, Director of Sleep Medicine at Boston Children's Hospital and Professor of Neurology at Harvard Medical School. Dr. Owens conducted a presentation on the science of adolescent sleep, as well as the consequences of insufficient sleep. Several important points were communicated based on research.

**Many professional medical and public health organizations have recommended that middle and high schools should not start school before 8:30 a.m. in order to provide adolescents more sleep.**

*These organizations include and are limited to: the American Academy of Pediatrics, Centers for Disease Control, National Institutes for Health and American Academy of Child and Adolescent Psychiatry, among others. Conversely, there are no medical and public health organizations that recommend middle and high schools to start before 8:30 a.m. ([www.startschoollater.net](http://www.startschoollater.net))*

**Adolescents need 8 to 10 hours of sleep per night.**

*(American Academy of Sleep Medicine, 2016)*

**Due to the biology of adolescents and circadian rhythms, adolescent sleep patterns shift to later hours for sleeping and waking, therefore making it difficult for an adolescent to fall asleep before 11:00 p.m.**

*(National Sleep Foundation, 2019).*

*Additionally, going to sleep earlier or using catch-up sleep do not positively impact an adolescent's rest.*

**Adolescent sleep deprivation poses a number of risks to our youth.**

*(Dr. Judith Owens and American Academy of Pediatrics, 2014).*

*Adolescents without sufficient sleep are more likely to engage in unhealthy risk behaviors (drinking alcohol, smoking tobacco, and using illicit drugs), perform poorly in school, be overweight, and suffer from depressive symptoms (CDC, August 2015 and others). An estimated 27% of all drowsy-driving-related car crashes involve 16-19 year old drivers. (AAA Foundation, 2018)*

Delaying school start times has been regarded as an effective countermeasure to chronic sleep loss, and contributes to benefits in adolescents' physical and mental health, safety and academic achievement. (American Academy of Pediatrics, Adolescent Sleep Working Group, *School Start Times for Adolescents* Policy Statement, 2014.)

## Sleep Research and Elementary Students

Very few studies have examined the impact of school start times on sleep and functioning of elementary age students (Keller, 2017). Therefore, it is unclear whether there are adverse effects on elementary students, given that few have studied whether earlier school start times are associated with negative outcomes for elementary students (Keller, 2017). Prior studies on school start times and academic performance have included case studies of schools in only one school district, for example, which make it difficult to judge the widespread impact and understand how school start times relate to schools with different characteristics (Keller, 2014). With that said, some findings have shown that earlier school start times, for some students, can be associated with poorer academic performance in elementary schools (Keller, 2014).

According to sleep researchers Buckhalt and Troxel (2019), the onset of puberty and specifically, the developmental shift that occurs in circadian biology during adolescence—is the largest foundation upon which the school start time movement has been based. There has been an assumption that because young children have not entered puberty, that earlier school start times are harmless in young children (Keller, 2017.) Researchers have stated that puberty is actually found to be occurring not just in adolescence, but even earlier years in young children. Gruber and McGill (2018) show that pubertal changes can happen by 3rd and 4th grade (Buckhalt, phone 2019; Gruber, 2018) and sleep research has also shown that sleep/wake hours are apparent as early as preschool age (Gomes, Portugal study, pre-print 2019).

One study comments that early school start times may require earlier wake times, which can contribute to less than adequate sleep-- termed “sleep restriction” (Keller, 2017). Restricted (or curtailed) sleep is associated with an increase in externalized symptoms (or behavior) in young children ages 7-12 (Keller, 2017).

The research also notes two important ideas: 1) Elementary age children sometimes receive less sleep due to a variety of variables--not just school start times (Keller, 2014). 2) Also, what has actually been found to be as important, is the regularity of sleep (Buckhalt, phone 2019).

In summary, there is wide agreement in the research and medical field that later school start times are beneficial for all students of all ages (Buckhalt, phone 2019; Keller 2017).

*One-hour of a later school start time would measurably reduce externalized behavior in young children.* (Keller, 2017)

*“There is “no sweet spot for school start times—even a twenty-minute change can be valuable.”* (Buckhalt, phone 2019)

## Massachusetts School Districts and Later School Start Times

Examining and changing school start times to later hours is not exclusive to Andover Public Schools. In Massachusetts, many school districts are actively examining later school start times (see Table 1). If a community is planning a school start time shift, the year of the later school start time is noted. This list provides a broad scope of the later school start time pursuits of Massachusetts schools, some of which may have been interrupted by the recent school closures due to the pandemic.

**TABLE 1**

Acton/Boxborough (2018-19)	Masconomet Regional
Arlington (2020-21)	Mashpee (2019-20)
Ashland (2017-18)	Melrose (2019-20)
Barnstable	Monomoy (2017-18)
Bellingham (2017-18)	Nauset Regional (2012-13)
Belmont (2019-20)	Newton
Beverly (2017-18)	Peabody
Burlington (2018-19)	Reading (2019-20)
Concord-Carlisle (2018-19)	Scituate (2019-20)
Chelmsford	Sharon (2010-11)
Dighton-Rehoboth	Stoneham (2018-19)
Dover-Sherborn (2020-21)	Sudbury
Duxbury (2016-17)	Watertown (2018-19)
Franklin (2020-21 target)	Wayland (2019-20)
Grafton (2020-21)	Westborough (2018-19)
Holliston	Weston (2019-20)
Hanover	Wilmington
Lexington (2020-21)	Winchester (2018-19)

## Merrimack Valley Community Schools

Among the Merrimack Valley Community (MVC) and other Massachusetts schools that Andover Athletics plays in games and meets, the majority of high school start times range from 7:00 a.m. to 7:44 a.m. and dismissals range from 1:50-2:20 p.m. Of the fifteen high schools in this time range, Andover High School has the latest school start time. Currently, there are four high schools that Andover Athletics plays that start school at 8:00 a.m. or later—ranging from 8:00 to 8:30 a.m. with dismissal ranging from 2:26 to 3:07 p.m. The high schools with the latest secondary start times are as follows:

Arlington High School	8:00 a.m.-2:26 p.m. (2019-2020 - Part I Phase-In)
Arlington High School	8:30 a.m.-2:56 p.m. (2020-2021 - Part II Phase-In)
Lawrence High School	8:00 a.m.-2:45 p.m.
Holliston High School	8:10 a.m.-2:43 p.m.

## Phases of Examining Transportation and Sample School Bell Times

### ❖ Phase 1: The Status Quo, Shift and Flip Scenarios

Early in the process, the School Start Time Working Group focused on identifying and examining viable school transportation options for the elementary and middle/high school levels. With the input and assistance of Mary Lu Walsh, Transportation Coordinator, later school start time options were drafted for the middle schools and high school, and possible implications were studied.

**TABLE 2**

School Hours			Transportation		
	Start Time Range	End Time Range		First AM Pick Up	Last PM Drop Off
<b>1. STATUS QUO: 2019-20 SCHOOL YEAR</b>					
Middle & High	7:45 / 7:44 AM	2:20 PM	Middle & High	6:40 AM	3:13 PM
Elementary	8:45 AM	3:15 PM	Elementary	7:48 AM	4:10 PM
<b>2. SHIFT: ELEMENTARY STARTS AFTER MIDDLE &amp; HIGH</b>					
Middle & High	8:15 – 8:30 AM	2:50 – 3:05 PM	Middle & High	7:10 – 7:25 AM	3:43 – 3:58 PM
Elementary	9:15 – 9:30 AM	3:45 – 4:00 PM	Elementary	8:18 – 8:33 AM	4:40 – 4:55 PM
<b>3. FLIP: ELEMENTARY STARTS BEFORE MIDDLE &amp; HIGH</b>					
Elementary	7:30 – 7:45 AM	2:00 – 2:15 PM	Elementary	6:33 – 6:48 AM	2:55 – 3:10 PM
Middle & High	8:30 – 8:45 AM	3:05 – 3:20 PM	Middle & High	7:25 – 7:40 AM	3:58 – 4:13 PM

Each school start time range in table 2 is considered a cost-neutral transportation option because it uses the same number of drivers and buses as in the 2019-2020 school year. It is important to note that transportation times describe only the earliest possible pickup and latest possible drop-off given the district’s current routes. Most students would be picked up later in the morning or dropped off earlier in the afternoon.

In spring 2019, Andover Public Schools contracted with Massachusetts Association of Pupil Transportation (MAPT) to examine current bus routes and seek possible transportation efficiencies. The recommendations of their report were as follows:

1. **The “Flip”** (elementary starts before middle and high school) - MAPT identified this option as transportation cost neutral, and cited potential concerns as: a) elementary students would be waiting in the dark for the bus, b) an elongated day for elementary students due

- to after school care, and 3) the support of older siblings providing child care to younger siblings would be lost due to middle and high school arriving home later than elementary.
2. **The “Shift”** (elementary starts after middle and high school) - MAPT identified this option as transportation cost neutral, and recommends this option.
  3. **All students arrive to school at the same time (8:30 a.m.)** - This option would require 82 buses to operate the two-tier system and eliminate the A/B runs.
  4. **Operate a 3-tier system** - MAPT proposed a fourth option to the School Start Time Working Group which involved starting middle school at 7:30 a.m., high school at 8:30 a.m. and elementary schools at 9:00 a.m. (no later than 9:15 a.m.) MAPT described the potential benefits of this option as follows: a) fewer students would experience the greatest bell time change, b) the high school would benefit from a later start time, c) elementary students would experience little change in the school day and d) the A/B runs would be eliminated by utilizing the entire bus fleet on all three tiers.

MAPT also noted that bell times for private schools could possibly be changed to accommodate Andover Public School bell times, so that the transportation fleet could serve all schools in the community.

It should be noted that inaccuracies were identified within the MAPT report, therefore their findings are noted for historical and process purposes only and should not be considered as viable solutions for later school start times.

## ❖ Phase 2: The Edulog Scenarios

In early fall 2019, the district sought a Request for Proposals (RFP) to conduct a school district transportation analysis. [Edulog](#) was awarded the contract to conduct an optimization study on Andover Public Schools’ transportation data. The purpose of the analysis was to objectively evaluate existing bus routes and various tasks for timely, efficient, and cost-effective transport of all students to and from their residence. The tasks analyzed were representative of options under consideration, rather than every potential alternative. The RFP tasks can be found on page 7 of the Edulog [report](#). The [report](#), [presentation](#) and [findings](#) were shared with the School Committee at their regular meetings and on the district website.

To further accomplish the tasks, the School Start Time Working Group studied the Summary of Findings (see Table 3) dated November 15, 2019, which was derived as sample start time scenarios from the Edulog findings. Then, the Working Group considered the major factors for the start time scenarios. Specifically, the group analyzed factors such as double runs (B-runs), private school bell times, time between public school tiers, and the need for additional buses.

**TABLE 3**

Summary of Findings: Edulog Transportation Optimization Study, 15 November 2019											
Scenario Name	Description	Do some buses have double runs on a single tier?	buses added in scenario	Time between public school tiers	Elementary Bell	MS/HS Bell	If public school bell times change in scenario, is there an impact to private school bell times?	Private School Bell	Earliest bus pickup AM	Latest bus dropoff PM	
1	status quo	elementary after middle/high	yes	0	60 minutes	8:45 AM	7:45 AM	yes	no change	6:43 AM (AHS-DMS)	4:23 PM (Mont-Pike)
2	flip	elementary before middle/high	yes	0	50 minutes	7:40 AM	8:30 AM	yes	each 60 min earlier	6:10 AM (Mont-Pike)	3:49 PM (WHMS)
3	flip	elementary before middle/high	no	6	45 minutes	7:45 AM	8:30 AM	yes	each 55 min earlier	6:10 AM (Mont-Pike)	3:49 PM (WHMS)
4A	shift	elementary after middle/high	no	6	60 minutes	9:15 AM	8:15 AM	yes	30 minutes later (same as public school shift)	7:15 AM (WHMS)	4:43 PM (Mont-Pike)
4B	shift	elementary after middle/high	no	8	40 minutes	9:15 AM	8:35 AM	yes	each 50 minutes later	7:35 AM (WHMS)	4:42 PM (Mont-Pike)
4C1	status quo (elem) + shift (ms/hs)	elementary after middle/high	no	10	40 minutes	8:45 AM	8:05 AM	yes	no change	7:05 AM (WHMS)	4:03 PM (South)
4C2	status quo or shift	elementary after middle/high	no	13	40 minutes	9:15 AM	8:35 AM	no	no change, at private school discretion (busing separate from public schools)	7:11 AM (Mont-Pike)	4:28 PM (South)
5	decouple middle and high school	elementary then middle then high	Impractical. Not evaluated.		35 minutes and 40 minutes	7:15 AM	7:50 AM / 8:30 AM	Impractical. Not evaluated.		6:24 AM (HPE & South)	4:26 PM (Mont-Pike)
6A	flip	elementary before middle/high	no	11	45 minutes	7:45 AM	8:30 AM	yes	each 10 minutes earlier	7:00 AM (HPE & South)	4:10 PM (Mont-Pike)
6B	flip	elementary before middle/high	yes	8	45 minutes	7:45 AM	8:30 AM	no	each 10 minutes earlier	7:00 AM (HPE & South)	3:54 PM (Mont-Pike)
6C	flip	elementary before middle/high	yes	5	45 minutes	7:45 AM	8:30 AM	no	STA -45 min and Pike/Mont +35 min to allow two-tier busing for privates (busing separate from public schools)	7:00 AM (HPE & South)	4:38 PM (Mont-Pike)
6D	flip	elementary before middle/high	yes	8	45 minutes	7:45 AM	8:30 AM	no	no change, at private school discretion (busing separate from public schools)	7:00 AM (HPE & South)	4:03 PM (Mont-Pike)

**Notes:**

(1) This is not a comprehensive list of potential bell time options.  
 (2) Edulog identified dependencies between private and public school bus routes. As indicated in the chart, some scenarios remove this dependency and have public and private school transportation operate independently.  
 (3) Where public and private school transportation operate independently, bell times of public schools can be changed within a scenario without impacting private schools.  
 For example, adding or subtracting minutes to each public school bell time and each public school transportation route would result in new start time solutions in scenarios 4C2, 6B, 6C, or 6D.

**More Technical Notes:**

(4) Scenarios 4C2, 6B, and 6D have private school students taking their own set of buses independent of public school students (single bus tier for these three schools). This requires 8 buses.  
 Scenario 6C has private school students taking their own set of buses independent of public school students, and private start times are spaced to allow two-tier busing for these three schools. This requires 5 buses.  
 (5) Of the 13 buses required in scenarios 4C2, 8 allow private schools to bus independent of public schools (see note 5), and 5 allow elimination of double runs. "Tiers" in 4C2 can be set 40 min apart only because double runs are eliminated.  
 (6) 4C1 requires 3 fewer buses than 4C2 because private school times in 4C1 align with public elementary times and 3 buses servicing STA can be incorporated into public elementary bus tier.

**❖ Phase 3: Narrowed Scenarios based on School Committee Parameters**

On December 5, 2019, School Committee requested that the School Start Time Working Group study in more depth, the specific bell time options that meet five criteria:

1. Does not require bus-transported students to be picked up before 7:00 a.m.;
2. Does not require changes to private school bell times;
3. Sets middle and high school bell times at least 20 minutes later than they are now with a target of the medically recommended time of 8:30 a.m.;
4. Sets elementary bell time no earlier than the current high school bell time with a target of 8:00 a.m. or later; and
5. Does not change the current length of the school day.

These parameters narrowed the group's focus from approximately twelve to four start time sample scenarios. The Working Group included the status quo scenario as a fifth option, although it should be noted that the status quo bell times do not meet the School Committee's parameters.

Ultimately, the Working Group removed scenarios that required substantial changes to private school bell times and those that added a significant amount of buses. This step is reflected in table 4.

**TABLE 4**

Potential Options for Further Study										
Description	Edulog Scenario Reference	Do some buses have double runs on a single tier? (see note 1)	If public school bell times change do private school bell times also require change? (see note 2)	Time between starts for public school tiers	Potential Elementary School Hours	Potential Middle/High School Hours	Edulog Bus Estimation	Time of first morning bus pickup (see note 4)	Time of last afternoon drop-off (see note 4)	
A. shift elementary after middle/high	scenario 4C1	No	Yes	40 min	8:45 AM to 3:15 PM	8:05 AM to 2:40 PM	add 10 buses	7:05 AM (WHMS)	4:03 PM (South)	
B. shift elementary after middle/high	not explicitly studied by Edulog	Yes	No	60 min	9:15 AM to 3:45 PM	8:15 AM to 2:50 PM	add 8 buses (see note 3)	7:10 AM (APS secondary)	4:40 PM (HPE B-run)	
					9:30 AM to 4:00 PM	8:30 AM to 3:05 PM		7:17 AM (Mont-Pike)	4:55 PM (HPE B-run)	
C. shift elementary after middle/high	scenario 4C2	No	No	40 min	8:55 AM to 3:25 PM	8:15 AM to 2:50 PM	add 13 buses (see note 3)	7:11 AM (Mont-Pike)	4:08 PM (South)	
					9:10 AM to 3:40 PM	8:30 AM to 3:05 PM		7:11 AM (Mont-Pike)	4:23 PM (South)	
D. flip elementary before middle/high	scenario 6D	Yes	No	45 min	7:45 AM to 2:15 PM	8:30 AM to 3:05 PM	add 8 buses (see note 3)	7:00 AM (HPE & South)	4:03 PM (Mont-Pike)	
					8:00 AM to 2:30 PM	8:45 AM to 3:20 PM		7:11 AM (Mont-Pike)	4:03 PM (Mont-Pike)	
current scenario (2019/20 school year)	N/A	Yes	Yes	60 min	8:45 AM to 3:15 PM	7:45 AM to 2:20 PM	N/A	6:40 AM (AHS)	4:20 PM (Mont-Pike)	

**Notes:**

- (1) Edulog estimates it takes 6 buses to eliminate double runs.
- (2) No in this column indicates public school bell times can be set independent of private school bell times. This is accomplished by having students transported to private schools operating independent of public school transportation.
- (3) In 2019/20, APS transports approximately 128 students to private schools. For scenarios that decouple public/private school bell times, Edulog estimates it will take +8 buses to transport these private school students on dedicated buses. There may be other solutions.
- (4) Bus times determined by Edulog as part of their study or deduced from information in the study (including appendix charts), except for "B" options which were determined by the APS transportation department. Work will still need to be done to determine "road ready" routes.

## Bus Transportation

Much of the Working Group process focused on developing viable bell time and bus transportation options. Part of this analysis was consideration of cost. The annual cost per bus in FY21 is \$59,580 (in a two-tier system). Additionally:

- 5 school buses would be required if the three private schools were dismissed far enough apart to allow two-tiers of busing (\$297,900);
- 6 buses to eliminate APS double runs (\$357,480);
- 8 buses to decouple three private schools from public school transportation (\$476,640).

There are other critical factors involving bus transportation that must be managed with time, communication and financial resources, in order to ensure the bus transportation company can adequately meet APS start times changes.

- Andover's current bus company relies on advance notice of additional buses that are needed by April before the following school year starts. This will require that APS provides

adequate prior notice of any change in start times to ensure the bus company can viably meet these demands.

- There has also been an issue with consistent bus drivers this past school year before the pandemic. The bus company will need to ensure the proper number of drivers are available to meet any increase in our total buses and shifts in start/dismissal. For example, currently six drivers have other jobs at 9:30 a.m. and a later start time may result in loss of drivers. Along similar lines, runs that return students home late (approximately 4:30 p.m.) may result in drivers not being able to take advantage of other jobs and a possible loss of drivers.
- Another question that has arisen is the interval of time between the tiers. According to the bus company, a one-hour interval between tiers has been transportation's past practice, and in their experience, this same interval would continue to be needed—especially for dismissal time. In contrast, Edulog demonstrated that the interval between tiers could be compressed to 40-45 minutes. This is a point of difference that would need to be confidently resolved in a road-ready analysis before implementation of a school start time change.
- The bus company noted that any driver who would have three runs, would have no time between any of the runs, and this—along with the impact of double runs for students, speaks to how tight the routes are scheduled and the potential benefit of eliminating B-runs.

According to the bus transportation company, it is possible to plan for increased buses and drivers with adequate notice and increased cost, in order to eliminate the B-runs and/or adapt to school start time configuration changes.

### **Special Transportation**

Another question is the impact of start time options on in-town special transportation. Currently, in-town special transportation has 16 vehicles which operate on a 60-minute interval between public school tiers. Three of the scenarios under study require 40-45 minute intervals. To better understand the potential implications of compressed time on in-town special transportation between tiers and under current conditions, the Transportation Coordinator estimated the impact as follows:

- With 60-minutes currently between tiers, Andover requires 2 small buses, 11 monitors, 15 vans and 2 Shawsheen mid-day runs.
- If there were 50-minutes between tiers, Andover would require 2 small buses, 13 monitors, 18 vans and 2 Shawsheen mid-day runs.
- If there were 40-minutes between tiers, Andover would require 2 small buses, 14 monitors, 20 vans and 2 Shawsheen mid-day runs.

The in-town special transportation schedule is fluid and dependent on a number of variables, such as the number of special needs students requiring in-town special transportation, various student accommodations, and distance, as examples. These variables require that in-town

special transportation be continuously adjusted to meet the needs of students within any interval schedule between tiers.

A 3-year cost for special transportation under current school start time conditions in 2019-2020 totals \$2,147,400. It stands to reason that if the intervals between school start times are compressed, the van routes for special transportation will need to be adjusted to arrive on time. Potentially shorter van routes will service fewer students per van. Additional vans and monitors would potentially be needed to service our current population if time is compressed between the tiers. The exact specifics of this will depend on the school start time scenario pursued.

### **Private Schools**

Andover Public Schools is legally required to transport in-town private school students. Currently APS provides busing for students of Andover School of Montessori, St. Augustine's School and Pike School. As identified in the Edulog report, public and private school transportation is closely linked and tiered, thereby affixing public and private school start times together, and affecting pick up and drop off times. There has been discussion about the benefits of decoupling public and private school transportation, in order to allow public schools to shift their start times to more preferred times, without affecting private school times. It would take an independent analysis of routing and cost to determine how to transport the current 128 private school students separately from the public school transportation runs.

Alternatively, the question of on-site childcare in the private schools arose, and how it may be a resource in accommodating various bus times. Each private school has before and after school fee-based childcare. In the case of two private schools, supervision is provided up to 30 minutes while students are waiting for the bus to arrive for dismissal. Therefore, students are already accessing a form of childcare or after school supervision.

As a third consideration, private schools were asked if they would consider shifting private school start times, in order to allow the public school more flexibility in changing start times. Two of three private schools communicated that they are able to consider shifting their school start times by 5-10 minutes. Unquestionably, the least disruptive option for the private schools is to maintain their current start times. With that said, the private schools are committed to working collaboratively with APS. Under the status quo scenario, some private school students are on the bus for an hour traveling home, and a change that shortens this ride would be welcomed.

### **Childcare**

Frequent questions about the availability of childcare arose throughout the school start time feedback process and in the School Start Time Parent Advisory Group. Currently, before and after school fee-based childcare is available in all of the APS elementary schools, with the exception of after school care at Sanborn School. There is anticipation that after school childcare will be available at Sanborn in fall 2020. KidCare, the after-school program offered in elementary schools by Andover Recreation, would be willing to shift its hours in accordance with new school start times. Similarly, the Cormier Youth Center also communicated a commitment to flexibility, in

order to adapt to school start time changes. The director did not believe that later dismissal times would adversely impact student enrollment in youth programming. Instead, it was anticipated that participation levels would remain the same, and the mission of later school start times was aligned to the same well-being goals of the youth center.

Parents have raised the question of whether or not free childcare will be provided by APS as a result of a start time change, and whether or not earlier drop-off times would be permitted on school campuses. In response to this question, APS may choose to consider mirroring current student arrival conditions. If this becomes the case, fee-based childcare would continue in the schools, and students would be allowed to arrive early on campus in the same manner as they are now. For example, elementary is currently permitted to arrive 30-minutes prior to the start of school, and this may potentially continue in a new school start time scenario if approved operationally by the school district.

### **Athletics**

Currently Andover Public Schools has 66 athletic teams in the district, and over 1,000 students at the high school participating in athletics—nearly 50% of the AHS student enrollment. AHS competes in Division I, which requires student travel. In the 2019-2020 school year, adding fifteen minutes to the school day presented challenges, including constraints on other facilities and traffic on the highway when traveling to away contests. Currently, AHS students engage in early school dismissals to make afternoon games on-time, including golf, girls' hockey, indoor track and boys' and girls' swimming. It has been commented that some students miss similar classes at the end of school day, even in the new AHS schedule. Some students have the same few classes at the end of the day, which poses a situation of missing the same class (or part of a class) repetitiously. It was noted however, that H block has been an instructional support. Early dismissals are needed into order to meet the specific window of availability for these sports, and also adjust for the impact of EEE.

If a start time change shifts AHS dismissal past 2:40 p.m. it will likely begin a ripple effect for athletics that is not yet fully understood, however there are some impacts that can be conjectured. One impact that can be anticipated is on AHS time slots for practices and games. Currently, AHS has desirable time slots with rental facilities (i.e. rinks, pools) that allow students to also complete homework and be home for dinner. If start times shift dismissal to 2:50 p.m. or later for example, AHS will need to attempt to negotiate new practice and game times. Current practices and game times will not necessarily fit within schedules that have been long-established over time. The athletic director would be required to negotiate practice and game times with competitor schools, and one outcome that could happen is that the other schools may not want to accommodate Andover's request to switch times or play at a different time. Another consideration may be to play far-away contests on weekends, rather than on weekdays.

It is also anticipated that a later dismissal time would inevitably impact Andover Youth Sports in terms of fields and gymnasium availability. Holding morning practices would be antithetical to the mission of later school start times for adolescents, therefore afternoon scheduling may become tight with many teams seeking space. Weekend practices and games may be an alternative, but

the practicality of this is not fully understood until a specific scenario is selected, and negotiation with other towns and discussion with youth sports is underway.

The notion of losing a sports team has not emerged, however there is some question of the impact on coaches. Out of 85 coaches in APS currently, 10-12 coaches teach at the elementary and middle school, and 10 teach at the high school. Any change in start and dismissal times should evaluate potential impacts on coaches.

In order to gain a fuller understanding of the impact of a later student start time and dismissal time, it would be beneficial to narrow bell time scenarios to one or two options, in order to have a better grasp on the ripple effect and magnitude of such a change on students in athletics.

### **Fine Arts**

Currently as structured, band, orchestra and chorus teachers are viewed as middle school/high school teachers in terms of contractual hours. Their teaching section numbers are equitable with their general music counterparts. However, their amount of preparation time due to travel, time on learning dedicated to instrumental verses general music, and itinerant status is greater than their counterparts.

Presently, elementary instrumental teachers instruct ensembles before the elementary school day (7:30-8:50 a.m.). They continue teaching instrumental and general music in the elementary day, and then transition to the middle school ensemble instruction (12:20-2:20 p.m.). In addition, the HS band and orchestra teacher also instructs at the middle level. "Flipping" the schedule would affect when high school band and orchestra are offered at AHS and would change when certain courses are scheduled within their 7+H model.

Simply 'flipping' when these teachers teach does not work evenly across schools. However, with significant scheduling considerations such as holding specific time slots in the schedule for music, carefully coordinating with other disciplines and possibly altering part of the middle school schedule, the need for additional teacher hires could be avoided. With that noted, the impacts are many and would affect schedules at all levels. Also, similar to the impact on athletics, later high school dismissal times may impact field time and travel for the marching band as well as potential rehearsal times for theater, show choir, jazz band and other musical groups.

To allow for better flexibility, as well as appropriate travel/prep time, an additional teacher position would allow improved coverage of instructional sections, mitigation of scheduling conflicts, adequate travel time, and room to grow the program should participation increase. It may also be beneficial to decouple middle school and high school music staffing, to allow more flexibility with scheduling, which would require additional staffing.

### **The School Start Time Parent Advisory Council**

The School Start Time Parent Advisory Council (PAC) has fifteen members that serve as delegates from the community, with one serving on behalf of the special education community and two serving from different private schools in town. The PAC is advisory to the School Start

Time Working Group. They help analyze school start options under the major considerations defined by the Andover School Committee. Summary feedback was communicated from the group as follows:

- There are varied opinions on the cost benefits. Some parents feel that 20-minutes of additional sleep may not be worth the high financial cost of increased buses, while others contend that even some increase in sleep for students is worth the cost and the other impacts noted in this report.
- Parents ask the School Committee to thoroughly investigate potential hidden costs.
- Parents ask if it would be possible to arrange for play, movement and other activities at school before the elementary day starts.
- Parents noted that an elementary start time of 8:45-8:55 a.m. seems beneficial for K-5 students and manageable for parents in terms of work schedules. Parents nearly all agree that a later afternoon home arrival (approximately 4:10 p.m. or later) for elementary students is too late, particularly for students who need after school therapies.
- Parents unanimously feel the B-runs should be eliminated for all schools who have them, and before any other school start time changes. Options that add buses, but do not eliminate B-runs are not as appealing to parents.
- Parents would like to see the same fee-based child care as other APS elementary schools implemented at Sanborn School in fall 2020.
- With regard to the middle/high school, parents feel that the 2:40 p.m. dismissal time allows for a shift in start times, while also preserving students' after school activities and allowing them time for homework and dinner.
- Parents would like to see thorough effort and planning around ensuring the bus routes are 'road ready' before their implementation.
- Above all, parents are unanimous in their commitment to social-emotional, physical health and well-being of all children. They recognize that the 'status quo' scenario that APS employs now does not meet the guiding principles, parameters and practical needs of students, and agree that some level of change is needed for school start times. With that said, parents are also unanimous in their voice that shifting school start times alone, is not a single solution toward improving student well-being. Instead, parents would like to learn and understand how the school start times are part of a much larger constellation of efforts by the Andover School Committee to support the social, emotional and physical health of all students.

### **Possible Next Steps for School Committee**

- 1) Based on the parameters set by the School Committee and feedback to date, consider narrowing *Table 4: Potential Options for Further Study* from five scenarios to no more than two to three for further in-depth study.
  - a. **Shift | Scenario 4C1 | Elementary 8:45, Middle/High 8:05 start**
    - **Benefits**
      1. This scenario preserves the elementary start of 8:45 a.m. which is desirable to many faculty, staff and parents based on feedback.

2. It eliminates double-bus runs (B-runs) for all elementary schools.
3. Since the existing bus runs could be reorganized for public and private school students, it allows private schools to maintain their bell times.
4. Middle/High school dismissal is at a desirable time (2:40 p.m.), which allows for a smaller impact on athletics and after school activities.
5. The earliest morning pick-up (7:05 a.m. WHMS) and latest drop-off (4:03 p.m. South) may be considered generally within reason.
6. It allows elementary music lessons to continue before school.

- **Drawbacks**

1. While this scenario allows for a later secondary start time (shifts by 20 minutes), it does not achieve the desired 8:30 a.m. start time for adolescents.
2. There is a question if the 40-minute interval between tiers as determined by Edulog is achievable in a road-ready implementation. The impact on in-town special transportation would need further study.
3. This scenario adds 10 buses which presents significant cost (\$595,800) and challenges of hiring additional drivers.
4. Music teachers may need to be hired to accommodate the later middle school/high school day, which would allow more flexibility in music scheduling. Also, adding elementary instrumental music into the school day may impact specialist times, by distributing the required 280 minutes of specialist time divided among five specialist classes instead of four.

**b. Shift | Not Explicitly Studied by Edulog | Elementary 9:15 or 9:30, Middle/High 8:15 or 8:30 start**

- **Benefits**

1. The 8:30 a.m. start for adolescents is achieved in this scenario.
2. This scenario allows for 60 minutes between tiers, which is desired by transportation and mirrors current conditions for buses and in-town special transportation
3. This scenario allows elementary music lessons to continue before school if desired.

- **Drawbacks**

1. While the 8:15 a.m. start time scenario for adolescents allows for a later secondary start time (shift by 30 minutes), it does not achieve the desired 8:30 a.m. start time for adolescents.
2. The 9:15 or 9:30 a.m. elementary start time scenario is less desirable, if not unmanageable, based on feedback by faculty, staff and families.

3. Private school bell times would need to be changed, or decoupling of public and private school times would need to be explored.
4. This scenario adds 8 buses, which presents significant cost (\$476,640) and challenges of hiring additional drivers, as well as challenges for drivers to work longer in the afternoon.
5. This scenario maintains double-runs (B-runs) for elementary schools.
6. The 8:30 start time for secondary results in athletics and activities being held later into the afternoon, needing to negotiate new practice and game times for teams, and developing a new athletic schedule.
7. The earliest morning pick-up (7:11 a.m. Montessori and Pike) may generally be within reason, however the latest drop-off (approximately 4:45 p.m. South) would be less desirable, if not unmanageable, based on feedback from faculty, staff and families.

**c. Shift | Scenario 4C2 | Elementary 8:55 or 9:10, Middle/High 8:15 or 8:30 start**

- **Benefits**

1. This scenario closely or fully achieves the desired goal of an 8:30 a.m. start for adolescents.
2. Private schools maintain their bell times and transported on their own bus runs with no bearing on public school bell times.
3. This scenario eliminates double-runs (B-runs) for elementary schools.
4. This scenario allows elementary music lessons to continue before school if desired.
5. The School Start Time PAC expressed some interest in this scenario, commenting that it would potentially mitigate some of the drawbacks for elementary, as well as middle/high school athletics and activities.

- **Drawbacks**

1. An 8:20 a.m. middle/high school start may be more desirable based on feedback than an 8:30 a.m. start, mainly due to impact on athletics and after school activities.
2. The 9:10 a.m. elementary start time scenario may less desirable based on feedback by faculty, staff and families.
3. There is a question if the 40-minute interval between tiers as determined by Edulog is achievable in a road-ready implementation. The impact on in-town special transportation would need further study.
4. This scenario adds an estimated 13 buses which presents significant cost (\$774,540) and challenges of hiring additional drivers.

5. The earliest morning pick-up (7:11 a.m. Montessori and Pike) may generally be within reason, however the latest drop-off (approximately 4:28 p.m. South) would be less desirable, if not unmanageable, based on feedback from faculty, staff and families.

**d. Flip | Scenario 6D | Elementary 7:45 or 8:00, Middle/High 8:30 or 8:45 start**

- **Benefits**

1. This scenario achieves the desired goal of an 8:30 a.m. start for middle/high school.
2. Private schools maintain their bell times and transported on their own bus runs with no bearing on public school bell times.
3. Elementary music could be delivered within the school day if additional music teachers are hired. Adding elementary instrumental music into the school day may impact specialist times, by having the required 280 minutes of specialist time divided among five specialist classes instead of four.

- **Drawbacks**

1. This scenario maintains the double-runs (B-runs) at the elementary.
2. The earliest morning pick-up (7:00 a.m. HPE and South) may not be considered within reason by parents of elementary students based on feedback, however the latest drop-off (4:03 p.m.) may be considered generally within reason.
3. This scenario does not allow for elementary music lessons to take place before the school day, however this could be resolved by the hire of additional music teachers to provide music instruction within the school day. Also, shifting elementary instrumental music in the school day requires the overall 280 minutes of specialist time to be distributed among five specialist classes, instead of four.
4. The 8:30 start time for secondary results in athletics and activities being held later into the afternoon, needing to negotiate new practice and game times for teams, and developing a new athletic schedule.
5. There is a question if the 40-minute interval between tiers as determined by Edulog is achievable in a road-ready implementation. The impact on in-town special transportation would need further study.
6. This scenario adds 8 buses which presents significant cost (\$476,640) and challenges of hiring additional drivers.

**e. Status Quo | Elementary 8:45, Middle/High 7:45 and 7:44 start**

- **Benefits**

1. The status quo option does not require an increase in busing due school start times remaining the same.

2. The status quo is a known option that is currently operational for the school system, families and community.

- **Drawbacks**

1. The status quo option does not meet School Committee goal of a later school start time for adolescents.
  2. The status quo option maintains the B-runs.
  3. Under the status quo scenario, some students are dismissed early from school for athletics.
  4. One private school run takes one-hour to bring students home at the end of the day. There is a plan to address this run with an additional bus in FY21.
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- 2) Advise the School Start Time Working Group to outline these two to three narrowed scenarios in detail, including transportation feasibility, costs and other impacts, as well as childcare, fine arts and athletics.
  - 3) Consider pursuit of an independent study of private school transportation, in order to understand the implications of potentially decoupling public and private school transportation.
  - 4) Analyze the potential increase in school transportation costs associated with the narrowed scenarios, including special transportation, if the time between the tiers is compressed.
  - 5) Advise the School Start Time Working Group to research and recommend a means, timeline and cost for developing a road-ready plan for school start time implementation.
  - 6) Consult the School Start Time PAC on next steps as the process moves forward.
  - 7) Provide continued updates to stakeholders with opportunities to provide feedback to the [School Start Time e-mail address](#) and School Committee.