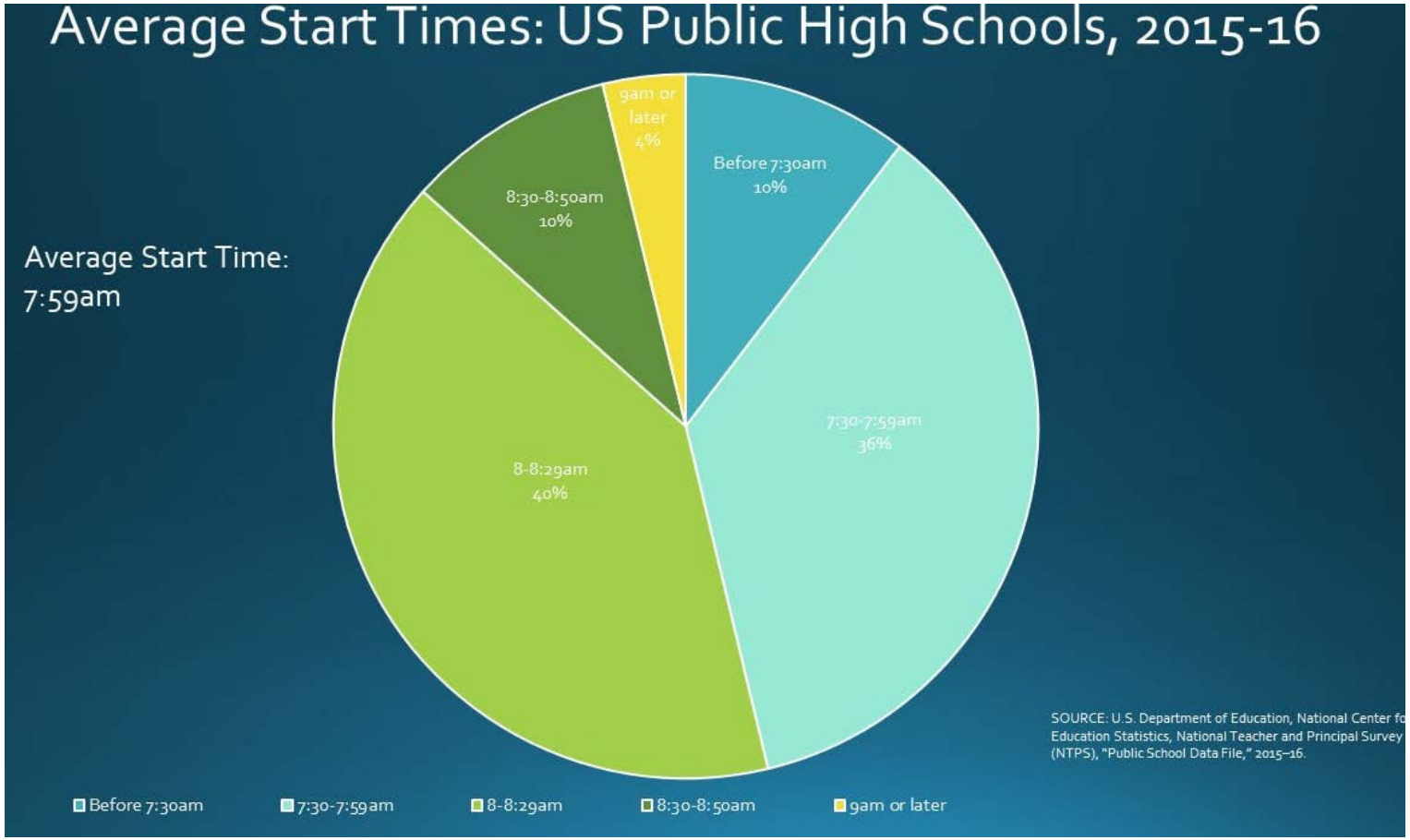
Later Start Times For Secondary Schools

Looking at the Impact on Transportation and Other Considerations

Why a Delayed Secondary Start Time?



Some History/Research on the Value of a Later Start Time

StartSchoolLater.net

- A shift in sleep cycles (circadian rhythms) beginning in adolescence makes it more difficult for most teenagers to fall asleep as early as younger children or older adults. Typical sleep cycles begin around 11 p.m. for adolescences and continue through 8 a.m..
- According to most sleep experts, most adolescents need about 9 hours of sleep per night. Today nearly 3/4 get under 8 hours of sleep per night, and over 2/5 get 6 or fewer.

Some History/Research on the Value of a Later Start Time

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- When schools start classes later, more students get more sleep.
- Contrary to expectation, bedtimes usually stay the same. A little extra time in the morning makes all the difference.
- With more sleep, rates of tardiness, truancy, absenteeism, and dropping-out decline.
- Improvements in academic achievement are nearly twice as high in students from economically disadvantaged homes.

Workshop on Adolescent Sleep Health and School Start Times at Trinity College, Connecticut (key items learned)

The Science of Sleep and Myths

- **Dr. Judith Owens MD, MPH Professor of Neurology, Harvard University**
  - **Myths**
    - **Teens would go to sleep earlier if parents just made them.**
    - **Take away phones, tablets, laptops, etc. and students will fall asleep faster.**
    - **If school starts later, students will just stay up later.**
    - **Teens can make up sleep on the weekends.**

Sleep in Adolescents: Later Bedtime

- Dr. Judith Owens MD, MPH Professor of Neurology Harvard University
  - Teenagers:
    - Experience a normal shift in circadian rhythms with age and with the onset of puberty.
    - This results in a biologically based shift of up to several hours in both the natural fall asleep time and morning wake times.
    - It is almost impossible for teenagers to fall asleep much before 11:00pm.

Sleep in Adolescents: Later School Start Time

- Dr. Judith Owens MD, MPH Professor of Neurology Harvard University
  - Outcomes:
    - School Attendance improves
    - Tardiness rates drop
    - Drop-out rates decline
    - Grades improve
    - Fewer reports of depression

Workshop on Adolescent Sleep Health and School Start Times at Trinity College, Connecticut (key items learned)

- Recommendation is to Start Secondary Schools 1 Hour Later - Minimum.
  - For CBSD Move from 7:25 to 8:30am Start Time. 9:00am is Preferred
- Pennsylvania requires 990 Hours of Instructional Time for Secondary Schools.
  - CBSD Calendar = 1,150 Hours for Secondary Schools.
  - New England Schools = 900 Hours
- Pennsylvania requires 900 Hours of Instructional Time for Elementary Schools.
  - CBSD Calendar = 1,042 Hours for Elementary Schools.

- Pennsylvania Requires School Districts to Transport to Private / Parochial Schools that are 10 Miles Outside of the School District Border.
  - New England School Districts are Required to Transport to Private / Parochial Schools Located within the Public School Boundaries.

Items to Consider

. . . . That may help or hinder transportation efficiency

Making a Delayed Secondary Start Time Coexist with Private and Parochial School Schedules

- Private and Parochial Bell Times are established by their respective school administration.
- CBSD cannot assign starting and ending times for these schools.
- Under Pennsylvania School Code we must provide transportation that is equivalent to CBSD students. (equivalent service not bell schedules).
- Majority of Private and Parochial Schools are transported over larger distances between 7:25am and 8:45am making it difficult to use these buses for other CBSD schools.
- Currently CBSD transports 1,477 non public students requiring 90 buses. (10 mile rule)
  - Some buses are able to transport CBSD and non public students together for efficiency.

Countless Scenarios are Possible

We limited our focus to three basic scenarios

Three Broad Scenarios

- **Scenario 1** - Adjust the CBSD High School and Middle School Starting Times from 7:25am to 8:30am. The Ending Time for HS and MS Would be 3:30pm.
  - No change to the CBSD elementary schedules. 8:35am to 3:45pm
- **Scenario 2** - Adjust School Start and End Times to Keep Transportation Expenses Cost Neutral.

- **Scenario 3** - Adjust CBSD Schools Start and End Times to Make Transportation more Efficient.

Scenario 1

- **Adjust CBSD High School and Middle School Starting Times from 7:25 to 8:30am**
  - Secondary schools ending time changes from 2:30 pm to 3:30pm
  - The secondary bell schedule becomes 8:30am to 3:30pm.
  - Elementary schools remain 8:35am to 3:45pm. (time range for A, B, and C elementary schools)

- **Issues:**
  - Compacting and overlapping of the secondary and elementary schedules reduces efficiency.
  - This scenario mostly allows for one-bus one-school pick up and drop off . (single tier)
  - School buses can no longer deliver students to two or more schools each morning and afternoon.
  - Longer student ride times as buses are more frequently competing with rush hour traffic.
  - HS and MS students may need to miss more class time to meet band and sports competition schedules.

- **Impact:**
  - Not enough buses and drivers to transport students to and from school within the time constraints.
  - Conservative estimates are for 140+ additional buses to meet the above schedule.
  - Major decrease in transportation efficiency and increase in overhead costs.

- **Outcome:**
  - Need for more school buses, school bus drivers, and aides.
  - Need additional parking for school buses, bus driver cars, and bus aide cars.

Scenario 2

- **Adjust the School Start and End Times to Make Transportation Cost Neutral.**
  - Middle school times change from 7:25am to 2:30pm to become 7:30am to 2:35pm.
  - High school times change from 7:25am to 2:30pm to become 8:20am to 3:20pm.
  - Elementary schools:
    - Tier A elementary schools change from 8:35am to 3:15pm to become 9:15am to 3:55pm.
    - Tier B elementary schools change from 8:50am to 3:30pm to become 9:30am to 4:10pm.
    - Tier C elementary schedule is eliminated.
- **Issues:**
  - Only 5 minutes of extra sleep for middle school students.
  - Tier B elementary schools dismissed 25 minutes later. Students getting home in the winter time with less daylight.
  - HS students may need to miss more class time to meet band and sports competition schedules.
- **Impact:**
  - Better bell schedule spacing between schools makes transportation slightly more efficient than current schedule.
  - Easier to transport middle school 9th grade athletes to high school practices on time.
  - Increase in driver hours and miles driven.
  - Need more substitute bus drivers to meet demands for sports and field trips.
- **Outcome:**
  - Potential savings of 1 to 2 school buses.
  - May need to make some of the later elementary bus stops individual house stops due to daylight.

Scenario 3

- **Adjust School Start and End Times to Make Transportation More Efficient.**
  - Middle school times change from 7:25am to 2:30pm to become 7:15am to 2:15pm.
  - High school times change from 7:25am to 2:30pm to become 8:00am to 3:05pm.
  - Elementary schools:
    - Tier A elementary schools change from 8:35am to 3:15pm to become 9:15am to 3:55pm.
    - Tier B elementary schools change from 8:50am to 3:30pm to become 9:35am to 4:15pm.
    - Tier C elementary schools schedules are eliminated.
- **Issues:**
  - Middle schools start a little earlier.
  - High schools start 35 minutes later
  - Tier B elem. schools dismissed 45 minutes later. Students getting home in the winter time with less daylight.
  - HS students may need to miss more class time to meet band and sports competition schedules.
- **Impact:**
  - Better bell schedule spacing between schools makes transportation more efficient.
  - Easier to transport middle school 9th grade athletes to high school practices on time.
  - Increase in driver hours and miles driven.
  - Need more substitute bus drivers to meet demands for sports and field trips.
- **Outcome:**
  - Potential savings of 7 to 10 school buses.
  - Helps alleviate the bus driver shortage.
  - May need to make some of the later elementary bus stops individual house-stops due to daylight concerns.

Scenario Summary

Scenario	Description	Level	Start Time	End Time
Current	**CBSD current bell schedule**	High School Middle School Elementary School	7:25 am 7:25 am A 8:35am / B 8:50am / C 9:05am	2:30 pm 2:30 pm A 3:15pm / B 3:30pm / C 3:45pm
1	**Delay High School and Middle School start times; No change to CBSD Elementary School schedule**	High School Middle School Elementary School *	8:30 am 8:30 am 8:35 am	3:30 pm 3:30 pm 3:45 pm
2	**Adjust schedule to keep Transportation expenses cost neutral**	High School Middle School Elementary School **	8:20 am 7:30 am A 9:15 am / B 9:30 am	3:20 pm 2:35 pm A 3:55 pm / B 4:10 pm
3	**Adjust schedule to make Transportation more efficient**	High School Middle School Elementary School **	8:00 am 7:15 am A 9:15 am / B 9:35 am	3:05 pm 2:15 pm A 3:55 pm / B 4:15 pm

* Reflects Time Range for Tier A, B and C Elementary Schools ** Eliminates Elementary Tier C

Why can't we Just . . . . .

- Move the Entire District Building Start Times ½ Hour or One Hour Later?
  - Conflict with private and parochial schools bell times. Similar to scenario 1 and the need for many more buses.
  - Heavier prime time traffic creating longer bus rides and expanded routes in the a.m. and p.m.
  - Elementary last stop times would move to well after 5:00 p.m. with associated diminished daylight issues in the winter.
  - Need for more substitute bus drivers for sports trips and field trips.

Why can't we Just . . . . .

- Have Elementary Schools Start Before the Secondary Schools.
  - This was an option recommended by the Edulog review of CBSD data.
    - It was not considered as parents like to have older high school/middle school siblings arrive home first to potentially baby sit younger elementary age students.
  - Younger students may need to wait for the morning bus in darker conditions from December through February.

Impact on Transportation

- Later start times will put buses on the roads at the same time as other rush hour vehicles.
- This will lengthen the amount of time students spend on a bus.
- It will make initial year bus schedules less accurate as the transportation department will need to relearn traffic patterns on each road.
- The software route analysis completed by the CBSD Transportation Department does not have a way to factor in the heavier rush hour traffic associated with later start times.

Feedback Received from Edulog

- The district contracted with Edulog, $3,000, to review the data in our transportation routing software database.
- Edulog found our routing data to be extremely reliable, with no issues found.
  - There were no proposed bus runs with distance or time calculation errors.
  - Student address matching is approximately 99% which is a very good indicator data management.
  - Negative bus schedule slack is 44 out of 1,292 bus runs or over 96% which is a good indicator of timely scheduling.
  - Bus run directions are in good order.

Other Broad Feedback Received from Edulog

- Edulog did not recommend a full hour shift in the high school/middle school schedules because it would essentially collapse a 2+ tier busing system into an inefficient single tier system. (scenario 1)
- A 30 minute high school time shift may be possible given the current non public schedule time constraints.
- 1 tier= 1 bus delivers to 1 school; 2 tier= 1 bus delivering to two schools; 3 tier= 1 bus delivering to three schools.
- Note: the district may want to contract with Edulog to help prepare a base scenario to the next level of detail.

Transportation Advisory Services (TAS)

In the fall of 2017, TAS was hired to conduct an overall assessment of the district's transportation system. **Comments on late high school start, page 8-4.** Link to TAS Final Report

- We understand that consideration is being given to a later start time for HS students.
- If the bell schedules are only adjusted for the high school students, given your current load factors, more buses would be needed to transport secondary students at a bell time similar to the elementary school students. (scenario 1)
- The only way we see that it could be done without increasing costs significantly would be to move the routing structure to a true triple tier bell time schedule District-wide.

  (scenario 3 of this PowerPoint presentation)
- Consideration also needs to be given to the impact a later start and end times will have on after school activities and related transportation. We recommend that a triple tier be considered as a way for reducing or controlling costs.

The Estimated Financial Impact

Scenarios 1, 2, and 3

Estimated Extra Financial Costs or Savings

Scenario 1

Adjust the High School and Middle School Starting Times from 7:25 to 8:30. No change for Elementary Schools.

147 extra buses at $51,000 per bus = $7.5 million in extra expenses per year.

Scenario 2

Adjust School Start and End Times to Keep Expenses Cost Neutral.

Middle school times change to 7:30am to 2:35pm. High school times change to 8:20am to 3:20pm.

Elementary schools:

Tier A elementary schools change to 9:15am to 3:55pm. Tier B elementary schools change to 9:30am to 4:10pm.

Tier C elementary schedule is eliminated.

Estimated to be no significant change in expenses.

Scenario 3

Adjust Start and End Times to Make Transportation as Efficient as Possible.

Middle Schools start at 7:15. High Schools Start at 8:00. Elementary Schools start between 9:15 and 9:35am

-7 less buses at $51,000 per bus = $350,000 estimated savings per year.

Questions ??