



BOARD OF EDUCATION OF HOWARD COUNTY

MEETING AGENDA ITEM

TITLE: School Start and Dismissal Time Committee Report **DATE:** November 17, 2016

PRESENTER(S): Frank V. Eastham Jr., Executive Director of School Improvement and Administration

David Ramsay, Director of Transportation

VISION 2018

GOAL: Students Staff Families and Community Organization

OVERVIEW:

A School Start and Dismissal Time Committee (SSDT) was established under the direction of the Superintendent to gather input from a broad base of stakeholders regarding the possibility of adjusting the start and dismissal times of schools. The committee examined research related to school start times, developed a survey to identify impacts on student well-being, student activities, community activities, and safety. A five-phase process for the analysis of school start and dismissal times was developed, including multiple opportunities for community feedback.

At the April 28, 2016 Board of Education (BOE) meeting, a motion was passed that directed staff to explore models where no middle or high school begins before 8:15 AM. This report presents these models and the impact considerations identified by the SSDT Committee for each.

RECOMMENDATION/FUTURE DIRECTION:

The SSDT Committee will schedule community forums to receive feedback on the model(s) the BOE selects.

SUBMITTED BY: _____
Frank V. Eastham, Jr.
Executive Director
School Improvement and
Administration

APPROVAL/CONCURRENCE: _____
Renee A. Foose, Ed.D.
Superintendent

Linda T. Wise
Deputy Superintendent

BACKGROUND

In September 2013, the Howard County Public School System (HCPSS) Superintendent charged staff to convene an exploratory work group to examine school start and dismissal times. The charge directed staff to examine research on high school start times with specific attention to student engagement, student achievement, and student well-being. The group reviewed sleep studies/research, high school start times throughout Maryland jurisdictions, and additional information relevant to how shifting high school start times might impact other programs at all levels. The initial work group became the School Start and Dismissal Time (SSDT) Committee and the committee's work has evolved to include five phases.

THE FIVE PHASES

| | |
|------------------|---|
| Phase I | <ul style="list-style-type: none">Review existing research and conduct an exploratory study of shifts to school start and dismissal times and potential impacts. |
| Phase II | <ul style="list-style-type: none">Establish a Committee.Seek stakeholder feedback. |
| Phase III | <ul style="list-style-type: none">Develop scalable implementation models.Prepare a detailed impact analysis for each model.Report to the BOE and HCPSS community on Phase III. |
| Phase IV | <ul style="list-style-type: none">Solicit additional stakeholder feedback through community forums.Report findings from community forums to the BOE for Board action. |
| Phase V | <ul style="list-style-type: none">Develop a detailed implementation plan should the BOE approve a change in start and dismissal times. |

During the 2013-2014 school year, staff conducted an exploratory study of shifts to school start and dismissal times and the potential impact for students and the community. In February of 2014, the Superintendent established a Committee to invite stakeholder input. After a thorough literature review, the SSDT Committee developed electronic surveys for each stakeholder group, administered the surveys, collected responses, and performed a preliminary analysis of the data collected. Based on the results of the survey, the committee developed potential models for elementary, middle, and high schools.

The models, along with impact considerations, were presented to the Board on October 22, 2015. After thoroughly reviewing each model, the Board tabled the work and directed staff to identify additional options. At the April 28, 2016 BOE meeting, additional models were presented. At this meeting, the BOE passed a motion that directed staff to bring forward models in which no

middle or high school would begin before 8:15 AM and provide a funding placeholder in the development of the 2017-2018 budget for this initiative.

MODEL DEVELOPMENT PROCESS

Over the past year, the Pupil Transportation Office (PTO) outlined the impact that start and dismissal time changes could have upon the Howard County Public School System's bus fleet. Two modelling strategies were used.

First, the PTO developed a forecasting tool using Environmental Systems Research Institute's (Esri) industry-leading geographic information system (GIS) and their suite of geospatial and geo-analytical tools to create a process to address what is referred to as a vehicle routing problem (VRP). This process analyzes every regular and specialized bus trip and tiers trips in the most efficient way possible.

The tool also evaluates each trip and calculates drive time, including additional time for students to load and unload a bus safely. The bus is expected to arrive at its starting and finishing point on time. Based on a trip's ending location, the tool seeks to service another trip in the most cost-efficient manner. For example, if bus A can service a subsequent trip more effectively and efficiently than bus B, then bus A will be assigned. The tool also is programmed to limit the addition of buses to any solution that would dramatically increase the overall cost.

Secondly, the PTO collaborated with Dr. Ali Haghani and Dr. Ali Shafahi, at the University of Maryland's A. James Clark School of Engineering, to evaluate the current bus routing process to design a system to model bus routes with various school start and dismissal times. After several months of research and testing, they created a mathematical model that calculates the most efficient deployment of the buses.

SUMMARY

This report examines the current HCPSS start and dismissal model and four models where no middle or high school begins before 8:15 AM. In each of the proposed models, elementary schools have the earliest start times ranging from 7:30 AM – 8:15 AM. All schools have a 6 hour and 45 minute student day, which is an increase of 15 minutes for elementary schools.

Over the past two years, the SSDT Committee has considered a wide variety of factors in reviewing the impact of a change in start and dismissal times.

Sleep

- Number of sleep hours for secondary students
- Alertness in classes
- Optimal wake time for secondary students

Childcare

- Availability of childcare
- Split-day childcare need for elementary age children
- Availability of secondary students to pick up younger siblings after school
- Time elementary and middle school students are home unattended before or after school

After-school Activities and Athletics

- Field availability
 - Joint Use Agreement will need to be revised and approved by the BOE and Department of Recreation and Parks
- Use of stadium lights
 - Utility costs associated with stadium light use
- Daylight limitations on contests and practices not held in the stadiums
 - Potential need to schedule AM practices and Saturday contests
- Available time for after-school activities (clubs, interventions, internships)
- Available time for after-school employment
- Start and end times for athletic events
- Availability of middle school staff for coaching positions

Safety

- Elementary students begin transit (walking or waiting at bus stops) prior to sunrise during daylight savings time
- Research suggests that car accidents among high school students are reduced with later start times, but increase during rush hour, or after sunset

Transportation

- Procuring a sufficient number of drivers due to current bus driver shortage
- Estimated costs do not account for enrollment growth or change in fuel charges
- Amount of time between the earliest start time and the last start time is 15-30 minutes shorter than the current model, which may require additional resources
- Ridership changes

Traffic

- Traffic during AM peak time and PM peak time
 - Athletic buses will be in PM peak traffic
 - Traffic on roads near schools during arrival

Implementation Timeline

- Procurement of bus contracts
- Hiring of bus drivers
- Routing validation
- Budget
 - Superintendent presents Proposed Budget – January 10, 2017
 - BOE adopts Approved Budget – May 25, 2017

Other

- Changes to staff work day schedules
- Impact on revenue due to decreased time facilities are available for community use

CURRENT MODEL

Key Features

High schools have the earliest start times. Elementary schools have the latest start times. The earliest start time is 7:25 AM. The latest start time is 9:25 AM.

Start Times and Delivery Windows

| School Level | Delivery Window | Bell Time Window |
|--------------------|-----------------|--|
| High Schools | 20 min. | 7:25 AM – 2:10 PM |
| Middle Schools | 15 min. | 7:40 AM – 2:25 PM 7:55 AM – 2:40 PM 8:00 AM – 2:45 PM 8:05 AM – 2:50 PM 8:10 AM – 2:55 PM 8:25 AM – 3:10 PM |
| Elementary Schools | 15 min. | 8:15 AM – 2:45 PM 8:35 AM – 3:05 PM 8:40 AM – 3:10 PM 8:45 AM – 3:15 PM 8:50 AM – 3:20 PM 8:55 AM – 3:25 PM 9:00 AM – 3:30 PM 9:15 AM – 3:45 PM 9:20 AM – 3:50 PM 9:25 AM – 3:55 PM |
| Cedar Lane | 15 min. | 7:55 AM – 2:25 PM |
| Homewood | 15 min. | 7:25 AM – 2:10 PM |

Number of Buses Required

| Number of Trips/Bus | # General Buses | # Specialized Buses | Total Buses |
|---------------------|-----------------|---------------------|-------------|
| Grand Total | 327 | 126 | 453 |

Projected Costs

- No additional base costs are anticipated other than to accommodate growth or fuel.

MODEL 1

Key Features

Elementary schools have the earliest start times at 7:30 AM and 8:00 AM. Middle schools have the latest start time at 9:15 AM.

Start Times and Delivery Windows

| School Level | Delivery Window | Bell Time Window |
|--------------------|-----------------|--|
| High Schools | 15 min. | 8:30 AM – 3:15 PM |
| Middle Schools | 15 min. | 9:15 AM – 4:00 PM |
| Elementary Schools | 15 min. | 7:30 AM – 2:15 PM 8:00 AM – 2:45 PM |
| Cedar Lane | 15 min. | 9:15 AM – 4:00 PM |
| Homewood | 15 min. | 9:15 AM – 4:00 PM |

Number of Buses Required

| Number of Trips/Bus | # General Buses | # Specialized Buses | Total Buses |
|---------------------|-----------------|---------------------|-------------|
| Grand Total | 342 | 127 | 469 |

Projected Cost Increase – \$1,781,804

- General Bus Fleet (15) - \$930,000
- Specialized Bus Fleet (1) - \$80,000
- Administration - (2 Bus Routers) - \$71,804
- Technology Improvement (Routing Software) - \$250,000
- Validation Routing - \$150,000*
- Cost Analysis Reserve - \$300,000**

*Validation routing is a practice run with actual buses during the scheduled times for each bus route using a selected model.

**Cost analysis reserve are funds set aside should additional buses be needed after validation routing is complete.

MODEL 2

Key Features

Elementary schools have the earliest start times at 7:30 AM and 8:00 AM. High schools have the latest start time at 9:15 AM.

Start Times and Delivery Windows

| School Level | Delivery Window | Bell Time Window |
|--------------------|-----------------|--|
| High Schools | 15 min. | 9:15 AM – 4:00 PM |
| Middle Schools | 15 min. | 8:30 AM – 3:15 PM |
| Elementary Schools | 15 min. | 7:30 AM – 2:15 PM 8:00 AM – 2:45 PM |
| Cedar Lane | 15 min. | 9:15 AM – 4:00 PM |
| Homewood | 15 min. | 9:15 AM – 4:00 PM |

Number of Buses Required

| Number of Trips/Bus | # General Buses | # Specialized Buses | Total Buses |
|---------------------|-----------------|---------------------|-------------|
| Grand Total | 327 | 128 | 455 |

Projected Cost Increase – \$931,804

- General Bus Fleet (0) – No Impact
- Specialized Bus Fleet (2) - \$160,000
- Administration - (2 Bus Routers) - \$71,804
- Technology Improvement (Routing Software) - \$250,000
- Validation Routing - \$150,000*
- Cost Analysis Reserve - \$300,000**

*Validation routing is a practice run with actual buses during the scheduled times for each bus route using a selected model.

**Cost analysis reserve are funds set aside should additional buses be needed after validation routing is complete.

MODEL 3

Key Features

Elementary schools have the earliest start times at 7:45 AM and 8:15 AM. High schools have latest start time at 9:15 AM

Start Times and Delivery Windows

| School Level | Delivery Window | Bell Time Window |
|--------------------|-----------------|--|
| High Schools | 15 min. | 9:15 AM – 4:00 PM |
| Middle Schools | 15 min. | 8:30 AM – 3:15 PM |
| Elementary Schools | 15 min. | 7:45 AM – 2:30 PM 8:15 AM – 3:00 PM |
| Cedar Lane | 15 min. | 9:15 AM – 4:00 PM |
| Homewood | 15 min. | 9:15 AM – 4:00 PM |

Number of Buses Required

| Number of Trips/Bus | # General Buses | # Specialized Buses | Total Buses |
|---------------------|-----------------|---------------------|-------------|
| Grand Total | 396 | 127 | 523 |

Projected Cost Increase – \$5,315,706

- General Bus Fleet (69) - \$4,428,000
- Specialized Bus Fleet (1) - \$80,000
- Administration - (3 Bus Routers) - \$107,706
- Technology Improvement (Routing Software) - \$250,000
- Validation Routing - \$150,000*
- Cost Analysis Reserve - \$300,000

*Validation routing is a practice run with actual buses during the scheduled times for each bus route using a selected model.

**Cost analysis reserve are funds set aside should additional buses be needed after validation routing is complete.

MODEL 4

Key Features

Elementary schools have the earliest start times at 7:45 AM and 8:15 AM. Middle schools have the latest start time of 9:15 AM.

Start Times and Delivery Windows

| School Level | Delivery Window | Bell Time Window |
|--------------------|-----------------|--|
| High Schools | 15 min. | 8:30 AM – 3:15 PM |
| Middle Schools | 15 min. | 9:15 AM – 4:00 PM |
| Elementary Schools | 15 min. | 7:45 AM – 2:30 PM 8:15 AM – 3:00 PM |
| Cedar Lane | 15 min. | 9:15 AM – 4:00 PM |
| Homewood | 15 min. | 9:15 AM – 4:00 PM |

Number of Buses Required

| Number of Trips/Bus | # General Buses | # Specialized Buses | Total Buses |
|---------------------|-----------------|---------------------|-------------|
| Grand Total | 362 | 127 | 489 |

Projected Cost Increase – \$3,021,804

- General Bus Fleet (35) - \$2,170,000
- Specialized Bus Fleet (1) - \$80,000
- Administration - (2 Bus Routers) - \$71,804
- Technology Improvement (Routing Software) - \$250,000
- Validation Routing - \$150,000*
- Cost Analysis Reserve - \$300,000**

*Validation routing is a practice run with actual buses during the scheduled times for each bus route using a selected model.

**Cost analysis reserve are funds set aside should additional buses be needed after validation routing is complete.

NEXT STEPS

HCPSS staff and the SSDT Committee will plan and facilitate regional community forums on the model(s) selected by the BOE. The forums are scheduled for the following dates and times:

- November 30th: 7:00 PM – 9:00 PM – Marriotts Ridge High School
- December 7th 7:00 PM – 9:00 PM – Howard High School
- December 14th 7:00 PM – 9:00 PM – Reservoir High School

There will be an online option for stakeholders to provide input on the SSDT models.

School-based staff also will have an opportunity to provide input during staff meetings held at each school.

The following meetings are scheduled before the BOE takes action on the start and dismissal times for the 2017-2018 school year.

- January 12th – 6:00 PM BOE Report
- February 7th – 7:00 PM Public Hearing
- February 23rd – 3:00 PM BOE Action