

Fairfax County Public Schools *Transportation Study*



Findings and Recommendations

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Part 1 - Options to Reduce Cost

- **Four Separate Analyses:**

- B. Modify out-of-boundary transportation

- C. Consolidate bus stops

- D. Increase secondary school walking distance

- E. Modify attendance boundaries

- **Utilized Logistical and Linear Programming Models**

- **Estimated Resource Requirements, Costs**

Part 2 – Bell Time Analysis

- ❑ **Continuation of Phase 1**
- ❑ **Pre-defined scenarios and constraints facilitate more detailed approach, more confidence in results**
- ❑ **Three scenarios – all with HS on 2nd Tier:**
 1. 1 h 45 m transportation window
8:00 – 9:45 start, 2:30 – 4:15 end
 2. 1 h 35 m transportation window
8:00 – 9:35 start, 2:30 – 4:05 end
 3. No cost / no new buses
Variable start and end times

Results: Transportation Options

Adjusted Maximum Impact (From Model)	Attendance Bndry	Stop Consolidation	Out of Boundary	Walk Boundaries
Change in Buses (Units in the sample area)	-12	-7	-20	-9
Change in Buses (Percent)	-7%	-4%	-12%	-6%
Model Solution Placement in Estimate Range ¹	Best Case	Best Case	Best Case	Best Case
System-wide Cost Change, Best Case Estimate ²	\$ (5,045,667)	\$ (2,943,306)	\$ (8,409,444)	\$ (3,784,250)
System-wide Cost Change, Worst Case Estimate ³	\$ (2,196,698)	\$ -	\$ (5,711,414)	\$ (878,679)

(1) Indicates whether the analytical solution (Adjusted Maximum Impact) provides, in our judgment, the best or worst case estimate;

(2) From Adjusted Maximum Impact

(3) From Minimum Impact

- ❑ **Changes = resource reduction from 4 to 12 percent**
- ❑ **Significant impact on levels of service**
- ❑ **Extensive reengineering required to implement**

Results: Bell Time Options

	Current	Scenario 1	Scenario 2	Scenario 3 (no cost)
Average HS Start Time	7:20 AM HS	8:50 AM HS	8:50 AM HS	8:17 AM HS
Earliest Start Time	7:20 AM HS	8:00 AM ES	8:00 AM ES	8:00 AM MS
Latest Start Time	9:15 AM ES	9:45 AM ES	9:35 AM ES	9:40 AM ES
Average HS End Time	2:10 PM HS	3:40 PM HS	3:40 PM ES	3:10 PM HS
Earliest End Time	2:10 PM HS	2:35 PM ES	2:35 PM ES	2:50 PM MS
Latest End Time	3:55 PM ES	4:25 PM ES	4:15 PM ES	4:35 PM ES

Key Assumptions:

- ☑ **Elementary school instructional days adjustable by +/- 5 minutes**
- ☑ **Bus routes retained current stop assignments, stop sequence, live running time, and passenger loads**
- ☑ **Elementary school times aligned to reduce the number of students picked up before or after civil twilight**

Results: Bell Time Options

Adjusted Maximum Impact (From Model)	Scenario 1	Scenario 2	Variable BT: 163
Change in Buses (Units in the sample area)	8	14	0
Change in Buses (Percent)	5%	9%	0%
Model Solution Placement in Estimate Range ¹	Best Case	Best Case	Best Case
System-wide Cost Change, Best Case Estimate ²	\$ 3,363,778	\$ 5,886,611	\$ -
System-wide Cost Change, Worst Case Estimate ³	\$ 6,590,093	\$ 9,226,131	\$ -

- ❑ **Estimated increase: 5 to 10 percent**
- ❑ **Zero cost scenario: Latest afternoon dismissal increases by 40 minutes**
- ❑ **Implementation would likely add to projected fleet expansion**

Recommendations

- ❑ **Comprehensive rewrite of transportation policies & guidelines**
- ❑ **Reengineer transportation in simulation based on revised policies new bell times**
- ❑ **Implement pilot or system wide revisions after testing simulation**
- ❑ **Allow 2-3 years from initial simulation to implementation**

Questions & Discussion

