

School Transportation Services Analysis

A Presentation to the Barrington School Committee

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Barrington School District

- ★ Total area is 15.4 square miles, of which 8.2 square miles is land and 7.2 square miles is water.
- ★ The population density is approximately 1,942 per square mile.
- ★ As such, for school transportation purposes, the District is considered to be densely populated.
- ★ Therefore, transportation efficiency may be determined by other than student loading, such as school bell schedules (tier time), route time, distance and drive time traffic.



Transportation Operational Efficiency

School transportation efficiency is generally determined by the following factors:

- ★ Manual vs. computerized routing and scheduling
- ★ The person who does the routing and scheduling determines the number of buses required.
- ★ Student Riders: Scheduled vs. Actual Riders (Student Loading)
- ★ Time available between school starting and ending times (Tiers)
- ★ Population density, i.e. number of students per mile of bus travel
- ★ Highway / road infrastructure and traffic patterns
- ★ A.M. routes generally drive the number of buses required, as more students ride in the morning than in the afternoon due to after school activities.

Current School Transportation Policies

- ★ **Transportation Walking Policies** (from their residence to their assigned school):
 - ★ Elementary (K-5): .75 mile
 - ★ High/ Middle School (6--12): 2.0 miles
- ★ **School Bus Idling**
 - ★ Buses are not allowed to idle while awaiting for passengers
 - ★ Buses are allowed to idle (time varies) due to outside temperature conditions
- ★ **Video Cameras**
 - ★ Video cameras are allowed for the purposes of monitoring student behavior as well as school transportation employees
- ★ **Student Pick Up Times**
 - ★ No student shall be picked up prior to **7:00 a.m.**

School Transportation Contract Costs

Our review of the current contract for school transportation (Ocean State) indicated the following costs:

CONTRACT COSTS		
RNT		
84 PAX	9	\$323.50
SNT	1	\$323.50
LATE BUSES		
	2	\$54.02
MONITORS		
	5	\$18.32

Based upon our review of school transportation contracts for Districts of similar size and demographics, it is our opinion that the current contractual rate (\$323.50) is cost effective. Current typical costs for new contracts are approximately \$367 per bus per day.

School Bell Schedules-Transportation Tier Times

SCHOOL	GRADES	START	END	A.M. TIME	P.M. TIME
Barrington High School 220 Lincoln Ave, Barrington, RI 02806	9-12	7:40	2:11	40*	29
Barrington Middle School 261 Middle Hwy, Barrington, RI 02806	6-8	7:50	2:05	50	35
Sowams Elementary School 364 Sowams Rd, Barrington, RI 02806	K-3	8:15	2:40	25	40
Nayatt Elementary School 400 Nayatt Rd, Barrington, RI 02806	K-3	8:15	2:40	25	40
Primrose Hill Elementary School 60 Middle Hwy, Barrington, RI 02806	PK - 3	8:15 - 2:40 AM Pre K 8:15 - 10:45 PM Pre K 12:00 - 2:30	2:40	25	40
Hampden Meadows Elementary School 297 New Meadow Rd, Barrington, RI 02806	4-5	8:50	3:20	35	60
			6.5		

*Policy no child transported before 7:00 a.m.

Transportation Operations

- ❖ The District currently operates a modified 3 Tier system, with Tier 1 being the High (9-12)/Middle School(6-8) and Tier 2 the Elementary Schools (PreK-3) and Tier 3 Hampden Meadows (4-5).
- ❖ **FINDING:** The Elementary Schools (A.M.) and the Middle and High Schools (P.M.) have a relatively short tier time (25 min.) available for school transportation. Ideally, a minimum of 50-60 minutes provides the amount of time necessary to maximize transportation efficiencies. Furthermore, the District past practice has been that routes should be no longer than 60 minutes and that no student is picked up prior to 7:00 a.m. When traffic issues and distance are included in the routes, the actual tier time available may be significantly less than the school bell schedules would indicate.
- ❖ **FINDING:** Given the relatively short tier time available for school transportation, combined with typical drive time traffic congestion, transportation efficiency is determined by other than student loading. The high number of students transported by other than school buses also exacerbates the traffic congestion problems associated with typical school drive times.

School Bus Capacities

School bus safety requires all students to be safely seated without legs in the aisle or blocking the bus aisle or rear emergency door. For upper grade students, this standard reduces the seating capacity to 2 students per seat. Current manufacturer 13" bus seats will not typically accommodate 3 students per seat for older students.

BUS SIZE	TIER	84	77	71	65	47	27	21	16	7
K TO 5	TIER 3	84	77	71	65	47	27	21	16	7
6 TO 8	TIER 2	56	52	47	43	31	18	16	11	5
9 TO 12	TIER 1	56	52	47	43	31	18	15	11	5

* According to Accepted Industry Standards

Current Vehicle Utilization

- ★ The District routinely utilizes 84 passenger buses for regular transportation. Door to door special education transportation is done utilizing buses no larger than 21 passenger mini buses.

CATEGORY	BUSES	MINI BUSES
RNT	9	
ID SPE	1	2*
OD SPE/HOMELESS	(RIDE Statewide Varies)	
SUBTOTAL:	10	2
TOTAL:		12

- ★ In addition to contracting, the District owns and operates 2 mini buses, which are scheduled for students who do not easily fit existing routes, workplace transportation, parent transportation, student emergency situations, etc.

Transportation Metrics

Metrics: A.M. Routes

No. Buses		11
No. Routes		30
Ave. Rts/Bus		2.7
Ave. Time/Rt.		0:24
Ave. Miles/Rt.		5.7
Ave.Sched. Load/Rt		82.2
Ave. Actual Load/Rt		31.7
Sched. Load/Capacity Ratio		113%
Actual Load/Capacity Ratio		43.5%

NON BUS	1515
RIDERS	61%

Metrics: P.M. Routes

No. Buses		11
No. Routes		30
Ave. Rts/Bus		2.7
Ave. Time/Rt.		0:23
Ave. Miles/R.t		5.6
Ave. Sched. Load/Rt.		82.3
Ave. Actual Load/Rt.		41.4
Sched. Load/Capacity Ratio		113%
Actual Load/Capacity Ratio		56.9%

NON BUS	1227
RIDERS	50%

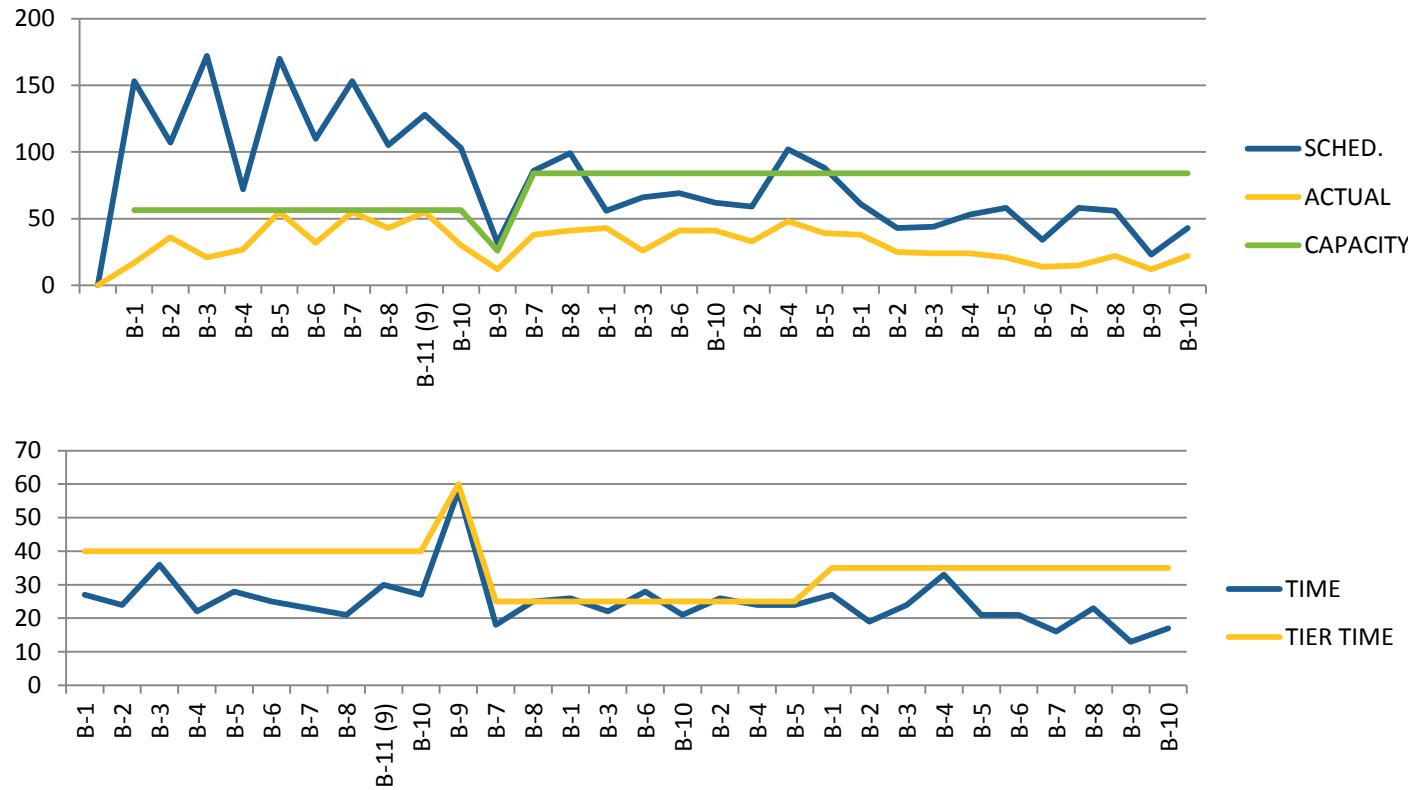
Of the 2465 eligible riders in the A.M. only 950 (38.5%) actually ride the bus. In the P.M. of the 2468 eligible riders only 1241 (50.2%) ride the bus.

P.M. ridership exceeds the A.M. ridership by 291 students.



Load Capacity & Tier Time Analysis

A.M. Routes



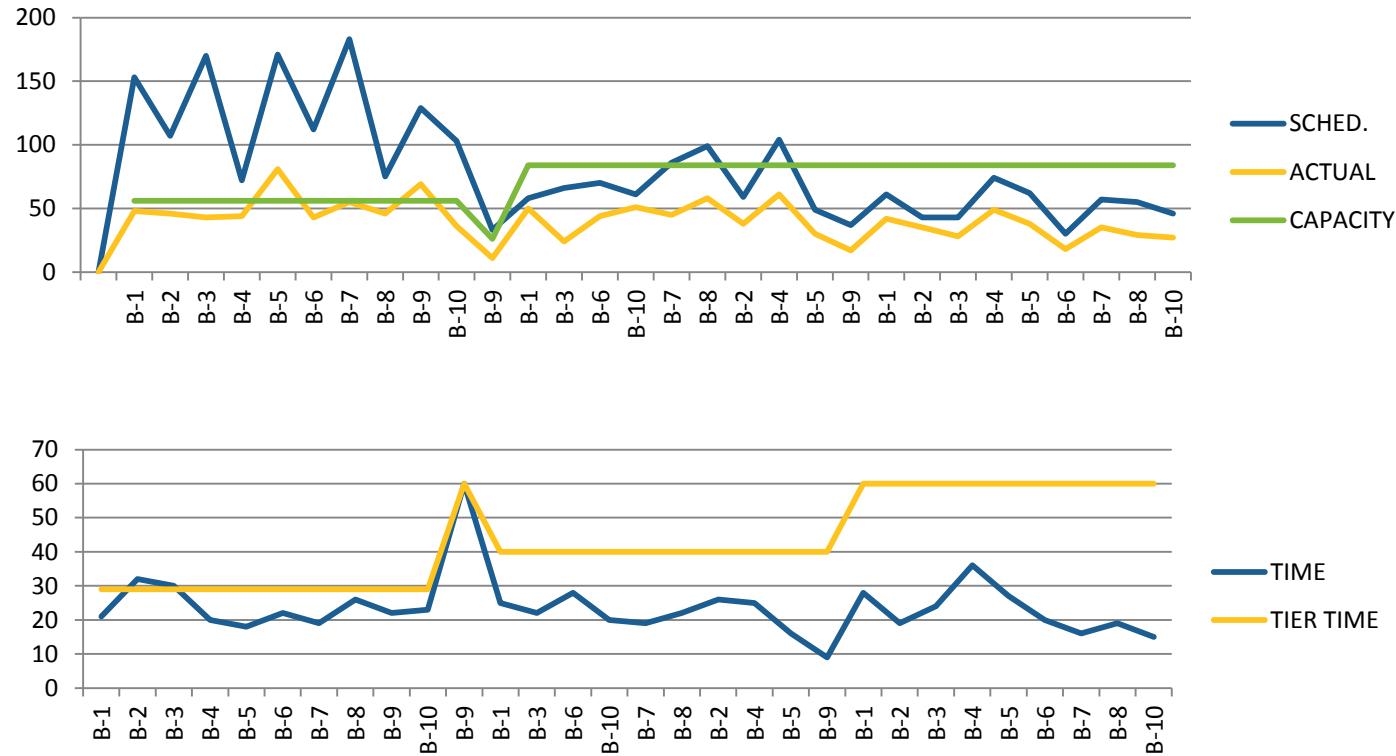
The average route time is approximately 24 minutes and 5.7 miles.

The average scheduled load is 82 students which represents an average of 113% of capacity.

The average actual load is 32 students which represents an average of 43.5% of capacity.

Load Capacity & Tier Time Analysis

P.M. Routes



The average route time is 23 minutes and 5.6 miles.

The average scheduled load is 82.3 students which represents 113% of capacity.

The average actual load is 41.4 students which represents 56.9% of capacity.

Potential to Reconfigure and Reduce Buses

Current Bell Schedules

A.M. Routes

- ★ Given the relatively low actual capacity ridership (65.9%) in the a.m. Tier 1 (HS/MS) it would be possible to reconfigure the routes and eliminate 1 bus (B-4). The resultant actual capacity ridership would be 73.2%.
- ★ Given the relatively low actual capacity ridership (46.3%) in the a.m. Tier 2 (Elem.) it would be possible to reconfigure the routes and eliminate 1 bus (B-3). The resultant actual capacity ridership would be 52.1%.
- ★ Given the relatively low actual capacity ridership (25.8%) in the a.m. Tier 3 (HMS) it would be possible to reconfigure the routes and eliminate 1 bus (B-7). The resultant actual capacity ridership would be 28.7%.

P.M. Routes

- ★ While both Tier 2 and 3 could be reconfigured to reduce 1 bus in the afternoon, the relatively high actual capacity ridership (91.3%) in the a.m. Tier 1 (HS/MS) it would be impossible to reconfigure the routes and eliminate a bus. The resultant actual capacity ridership would be 101.4%, i.e. overcrowded.

Since the District pays for buses on a per day basis, unless a bus could be eliminated in all tiers, both a.m. and p.m. it would not be feasible or practical to eliminate a bus for a partial day.

OPTION 1

Retain 3 Tier System and Revise High/Middle School Start Time to 8:00 a.m.

SCHOOL	GRADES	START	END	A.M. TIER	P.M. TIER
Barrington High School 220 Lincoln Ave, Barrington, RI 02806	9-12	8:00	2:41	60	34
Barrington Middle School 261 Middle Hwy, Barrington, RI 02806	6-8	8:10	2:31	60	34
Sowams School 364 Sowams Rd, Barrington, RI 02806	K-3	8:45	3:15	35	40
Nayatt School 400 Nayatt Rd, Barrington, RI 02806	K-3	8:45	3:15	35	40
Primrose Hill 60 Middle Hwy, Barrington, RI 02806	PK - 3	8:45 - 3:10 AM PreK 8:45- 11:15 PM PreK 12:30- 3:10	3:15	35	40
Hampden Meadows 297 New Meadow Rd, Barrington, RI 02806	4-5	9:20	3:50	35	60

The change in the high and middle school start time to 8:00 a.m. had no appreciable difference in the number or configuration of routes necessary.

However, in order to accommodate the three-tier system with a later tier 1 start time resulted in a relatively late start and end time for Hampden Meadows School.



OPTION 1A

Revise to 2 Tier System and Revise High/Middle School Start Time to 8:00 a.m.

SCHOOL	GRADES	START	END	A.M. TIER TIME	P.M. TIER TIME
Barrington High School 220 Lincoln Ave, Barrington, RI 02806	9-12	8:00	2:41	60	50
Barrington Middle School 261 Middle Hwy, Barrington, RI 02806	6-8	8:10	2:31	60	50
Sowams School 364 Sowams Rd, Barrington, RI 02806	K-3	9:00	3:30	50	60
Nayatt School 400 Nayatt Rd, Barrington, RI 02806	K-3	9:00	3:30	50	60
Primrose Hill 60 Middle Hwy, Barrington, RI 02806	PK - 3	9:00 - 3:15 AM PreK 9:00--11:30 PM PreK 12:30-3:15		3:15	50
Hampden Meadows 297 New Meadow Rd, Barrington, RI 02806	4-5	9:00	3:15	50	60

While maintaining the High and Middle School on Tier 1 and all of the Elementary Schools on Tier 2, it would be possible to eliminate 1 bus for the A.M. routes.

However, due to the increased ridership in the afternoon, it is NOT possible to eliminate a bus for the P.M. routes. The resultant combination would be overloaded buses, increased student discipline issues, students sitting in the aisles or standing; all of which constitute unsafe school transportation.

OPTION 2

Retain 3 Tier System and Revise High/Middle School Start Time to 8:30 a.m.

SCHOOL	GRADES	START	END	A.M. TIER TIME	P.M. TIER TIME
Sowams School 364 Sowams Rd, Barrington, RI 02806	K-3	7:45	2:15	45	45
Nayatt School 400 Nayatt Rd, Barrington, RI 02806	K-3	7:45	2:15	45	45
Primrose Hill 60 Middle Hwy, Barrington, RI 02806	PK - 3	7:45 - 2:15 AM PreK 7:45- 10:15 PM PreK 11:30- 2:15	2:15	45	45
Barrington High School 220 Lincoln Ave, Barrington, RI 02806	9-12	8:30	3:00	45	40
Barrington Middle School 261 Middle Hwy, Barrington, RI 02806	6-8	8:40	2:54	35	40
Hampden Meadows 297 New Meadow Rd, Barrington, RI 02806	4-5	9:20	3:50	40	60

The change in the high and middle school start time to 8:30 a.m. had no appreciable difference in the number of or configuration of routes necessary.

However, in order to accommodate the three-tier system with a later tier 1 start time resulted in a relatively late start and end time for Hampden Meadows School.

OPTION 2A

Revise to 2 Tier System and Revise High/Middle School Start Time to 8:30 a.m.

SCHOOL	GRADES	START	END	A.M. TIER TIME	P.M. TIER TIME
Sowams School 364 Sowams Rd, Barrington, RI 02806	K-3	7:45	2:15	45	45
Nayatt School 400 Nayatt Rd, Barrington, RI 02806	K-3	7:45	2:15	45	45
Primrose Hill 60 Middle Hwy, Barrington, RI 02806	PK - 3	7:45 - 2:15 AM PreK 7:45-- 10:15 PM PreK 11:45-2:15	2:15	45	45
Hampden Meadows 297 New Meadow Rd, Barrington, RI 02806	4-5	7:45	2:15	45	45
Barrington High School 220 Lincoln Ave, Barrington, RI 02806	9-12	8:30	3:00	45	60
Barrington Middle School 261 Middle Hwy, Barrington, RI 02806	6-8	8:40	2:54	45	60

A.M.	2 TIER	P.M.	2 TIER
SCHED	687	SCHED	689
ACTUAL	350	ACTUAL	418
CAPACITY	756	CAPACITY	756
SCHED	473	SCHED	471
ACTUAL	217	ACTUAL	301
TOTAL	567	TOTAL	719
CAPACITY	756	CAPACITY	672
RATIO	75%	RATIO	107%

While maintaining the Elementary Schools on Tier 1 and all of the High and Middle School on Tier 2, it would be possible to eliminate 1 bus for the A.M. routes.

However, due to the increased ridership in the afternoon, it is NOT possible to eliminate a bus for the P.M. routes. The resultant combination would be overloaded buses, increased student discipline issues, students sitting in the aisles or standing; all of which constitute unsafe school transportation.

An alternative would be to back up the start time of the Tier 1 schools by approximately 15 minutes. This would necessitate a revision of the current policy and allow students to be picked up no earlier than 6:45am rather than 7:00am and would require 1 additional large bus and 1 additional mini bus.

Contract Cost for Additional Buses

- ★ Should the District choose to revise its school bell schedules in a manner which would necessitate the addition of one or more school buses, the resultant cost increase would be approximately as follows:

CONTRACT COST			
ADDITIONAL BUSES			
RNT		DAILY	ANNUAL
84 PAX	1	\$323.50	\$58,230.00
SNT	1	\$323.50	\$58,230.00
MONITORS			
	1	\$18.32	\$14,839.20

An alternative would be to “negotiate” a half day cost per bus rate with the incumbent Contractor. Such a rate could possibly save \$ 12,000- \$15,000 per bus.

Bus Monitors

The District currently employs 2 Bus Monitors who are also trained drivers (sub drivers) for their mini buses. In addition, 4.5 Bus Monitors are employed by the current contractor.

Monitors are required by DESE regulation for all special education vehicles and for students through grade 5.

In the Statewide Special Education Program, in which all Districts are required to participate, the cost of the Bus Monitors is built into the cost per day per bus/vehicle calculation by RIDE and the cost of which is prorated and cost shared amongst those Districts utilizing those services.

Any request for a waiver from the bus monitor requirement must be made in writing to the RIDE Commissioner of Education with a specific justification for the request.

With regard to a waiver, they are typically granted only if:

- ★ The District certifies that there are no students with handicapping conditions, including behavioral issues on the respective bus and that there have been no student safety incidents or issues over the past several years
- ★ The Bus Monitors do not act as crossing guards to assist students crossing the street (a source of student school bus accidents)

Bus Monitors (cont.)

A waiver places liability for any student injury on the District, even though the Bus Monitor may be a Contractor employee. Typically, waivers are NOT granted solely for the purpose of saving money.

The following identifies the potential cost savings, should a waiver be granted for the District's contracted transportation employed bus monitors (Ocean State):

MONITOR COST AVOIDANCE					
					2018-19
MONITORS	NO.	HOURS	DAYS	RATE	ANNUAL
	4	4.5	180	\$ 18.32	\$ 59,340.60
	1	2.5	180	\$ 18.32	\$ 8,241.75
				TOTAL:	\$ 67,582.35

RECOMMENDATION: Current school employed paraprofessionals should be encouraged to act as Bus Monitors before and after school for additional compensation. This has proven to provide better trained personnel and Monitors both know and are knowledgeable of the child's special requirements.

Insurance Requirements

FINDING: The District does not specifically require automobile liability coverage for Under Insured and/or Uninsured motorists.

This is important as over the past decade there are more drivers who are either minimally insured or are uninsured. In the event of a school bus accident, it is incumbent upon management to protect the financial interests of both the District and their municipality.

RECOMMENDATION: District management may wish to review the Contractors automobile liability insurance policy and should immediately request that the Contractor add insurance coverage for Under Insured and Uninsured Motorists and that the Excess Liability coverage extends to both of those lines in the vent of excess damages. In addition, District management should require that both the District and the municipality be added as additional insureds under their general and vehicle liability insurance policy. This would provide protection to both the District and the municipality in the event of an accident and resulting financial damages.

Commendations

Transportation management should be commended for routinely investigating alternatives to adding contracted vehicles and utilizing other transportation sources, which may be more cost effective, such as the use of their own mini buses.

Transportation management should be commended for recognizing the relatively small number of actual riders and routinely overscheduling those routes in order to achieve route efficiencies.

The transportation staff, including the special education staff should be commended for trying to maintain students in their neighborhood schools whenever educationally possible.

The District administration should be commended for having negotiated and maintained a school bus contract at less than the current “market rate”.

Transportation management should be commended for routinely scheduling multi school pick up and drop off where tier time bell schedules allow.

Summary

- **FINDING:** Based upon our review of school transportation contracts for Districts of similar size and demographics, it is our opinion that the current contractual rate (\$ 323.50) is cost effective. Current typical costs for new contracts are approximately \$ 367 per bus per day.
- In addition to contracting, the District owns and operates 2 mini buses, which are scheduled for students who do not easily fit existing routes, workplace transportation, parent transportation, student emergency situations, etc. Self-operation for relatively small numbers of students is considered more cost effective than contracting.
- Generally, the morning routes determine both the number and configuration of vehicles required. Typically, a significant number of students routinely remain after school for athletics and/or other school activities.

However, contrary to typical school transportation operations, Barrington has significantly more students (291) who ride their assigned school buses in the afternoon than in the morning. In addition, there appears to be an extraordinarily high number of eligible riders who do not ride their assigned school buses either in the morning (61%) or the afternoon (50%). Therefore, it is the P.M. routes which will determine the overall number and configuration of buses and transportation efficiency.

Summary (cont.)

FINDING: The Elementary Schools (A.M.) and the Middle and High Schools (P.M.) have a relatively short tier time available for school transportation. Ideally, a minimum of 50-60 minutes provides the amount of time necessary to maximize transportation efficiencies. Furthermore, the District past practice has been that routes should be no longer than 60 minutes and that no student is picked up prior to 7:00 a.m. When traffic issues and distance are included in the routes, the actual tier time available may be significantly less than the school bell schedules would indicate. This policy impacts the available tier time for any Tier 1 routes, but especially that of the current high/middle school routes.

Given the relatively short tier time available for school transportation, combined with typical drive time traffic congestion, transportation efficiency is determined by other than student loading. The high number of students transported by other than school buses also exacerbates the school traffic congestion problems associated with typical school drive times.

Summary (cont.)

FINDING: Approximately 44 %-50 % of those students eligible to ride are NOT being transported by school bus. There appears to be a relatively large number of students who are being dropped off by parents, driving, car pooled with other students, etc.

In the A.M., while 2465 students are eligible to ride, only 950 actually do so.
Approximately 1515 (61% of eligible riders) do not ride the bus.

In the P.M., while 2468 students are eligible to ride, only 1241 actually do so.
Approximately 1241 (50% of eligible riders) do not ride the bus.

Should the District wish to investigate the reasons for this level of parent transportation, they may wish to conduct an online survey of parents.

Revising the High/Middle School starting times to 8:00 a.m. or 8:30 a.m. had no appreciable effect on either the configuration or number of buses required in a two tier system in the morning. But given the larger number of riders in the P.M., a two tier system would require 1 additional large bus and 1 additional mini bus with monitors at an anticipated increased cost of approximately \$131,299. In addition, the current policy of no earlier than 7:00am pickup would have to be revised to allow pick-ups no earlier than 6:45am.

Summary (cont.)

- ★ **CAUTION:** Transportation management can sometimes “over consolidate” routes in order to eliminate a bus, only to have to reinstate it during the year or the following year due to required changes or routes which are too long. As a result an efficient transportation system requires some “excess” capacity in order to manage the route and schedule changes from year to year in order to not have to add a bus and driver during the year and after the budget has been set. This is especially true for specialized transportation, which changes almost daily based upon the transportation requirements of the students.
- ★ **CAVEAT:** However, we do not recommend changing school bell schedules for school transportation purposes. School schedules should be set by the District in accordance with their educational requirements.

QUESTIONS/DISCUSSION

1. ***Was grade/school reconfiguration included in the study?*** No, we only looked at the various school bell changes and their potential impact on school transportation efficiencies.
2. ***Did we consider changes in school policies, i.e. school pick up times, school walking distances?*** Yes, there were several scenarios where a change in the pick up time to “no earlier than 6:45 a.m. would have helped in efficient scheduling. Re: Walking distances, it appeared that if you lengthened the walking distances you would probably increase parental transportation and exacerbate the current traffic congestion problems. Shortening the walking distances may increase the number of riders but could also increase the tier time necessary and require a change in bells schedules to accommodate or even additional buses if the HS/MS p.m. routes.
3. ***What was taken into account in “reconfiguration of routes”?*** Among the things considered were: the number of bus stops, the walking distances to bus stops, the overall time for the routes, the number and sizes of buses required, longer routes (but still running for ALL scheduled riders).
4. ***Actual student rider count days?*** December 4-8, 2017.
5. ***Are any paraprofessionals currently acting as Bus Monitors?*** No, not currently.
6. ***Did you consider having kids opt in/opt out?*** No, you have to run the route based on the scheduled students and can only “skip” the stops where students are habitually not riding. Our experience has been that if asked, parents will not opt their child out of a free service, just in case. But given the number of non bus riders, a parent survey may be warranted with that question.

QUESTIONS/DISCUSSION

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(Cont.)

7. ***Given the 2 per seat limitation for HS/MS routes, was there any consideration of rerouting to spread out any overcrowding?*** In the a.m. they are at only 65.9% of ridership capacity and in the p.m. and 91.3% in the p.m.. That is at 2 per seat. Only 1 p.m. route is crowded but has not been problematic this year.
8. ***Even with a 2 tier system I do not see the need to add buses?*** The 2 tier system results in an overcrowded buses in the p.m. only (107% of capacity): 719 actual riders for 672 seats. Those extra 47 students would require 1 big and 1 mini bus.
9. ***If we had a more developmentally appropriate starting time for K-5 of 8:00 a.m. what would the HS/MS start time be without requiring additional buses?*** On a 3 Tier system, the HS/MS start time would have to be 45 minutes prior to the 8:00 a.m. or 7:15 a.m. This would also require earlier than 7:00 a.m. pick ups. On a 2 Tier system, the HS/MS could be either 45 minutes before (7:15 a.m.) or 45 minutes after (8:45 a.m.). However transporting all of the K-5 in a single tier, regardless of time, would require additional buses in the p.m. Without changing the pick up policy and having a Tier 1 start time of 7:45 a.m. or earlier would require a change in the 7:00 a.m. pick up policy.

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