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Alexandria City Public Schools

2023-24 and 2024-25 Transportation Studies Executive Summary

April 2025

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April 15, 2025

Mx. Sophie Huemer
Director of the Office of Capital Programs, Planning, & Design Services
Alexandria City Public Schools
1340 Braddock Place
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Mx. Huemer,

TransPar Group, Inc., is pleased to submit the following executive summary of the original draft deliverables presented to ACPS for the route efficiency, bell time, and facility analyses conducted during the 2023-24 school year, as well as the updated studies and analyses conducted during the 2024-25 school year.

The remainder of this document condenses the full project milestone deliverables that have been presented to the district to-date. Should more detailed information be requested, we will advise which of the aforementioned deliverables can be reviewed to meet the stated request.

We are grateful for the opportunity to continue our partnership with ACPS, and we invite you to ask any questions you may have as we continue the finalization of this new scope of work to ensure it meets the district's stated needs and goals. I can be reached at (512) 284-2916 or via e-mail at mbrassfield@transpar.com with any questions.

Sincerely,

Micah Brassfield
Vice President
TransPar Group, Inc.

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Executive Summary

Project Overview:

In December 2024, TransPar Group, Inc. was re-engaged by Alexandria City Public Schools (ACPS) to update the transportation study conducted during the 2023-24 school year. The initial scope of work included route efficiency, bell time, and facility analyses which were completed and delivered to the district in April of 2024. Due to a desire to more thoroughly discuss the recommendations made within the context of current and future operational constraints and resources, while also navigating competing district initiatives, ACPS postponed decisions for acting on the recommendations until the 2024-25 school year. Recognizing ongoing challenges and a need to refresh two of previous studies, ACPS expanded TransPar's project scope to include the following updated and/or additional analyses. Of note, TransPar was not asked to update the facility study in the new scope of work but will summarize the observations and recommendations from the facility portion of the study conducted during the 2023-24 school year.

2024-25 Key Analyses:

1. RouteYield™ Analysis:

An update to the previous route efficiency study comparing 2024-25 route data to 2023-24 route data, which analyzed the time and capacity utilization of each bus run and route, revealed the following:

- Decreasing Ridership Trends: Ridership has decreased in both the morning and afternoons.
- Stable Overall Capacity Utilization, Under Utilization of the System as a Whole: AM capacity utilization has increased, while PM capacity utilization has remained stable; overall time and capacity utilization across the system is below 60%, indicating opportunities for run and route consolidation
- Minor to Moderate Standard Deviations: Standard deviations of runs have improved, suggesting more consistent run lengths; approximately 40 minutes are needed between bell time tiers in the morning and 36 minutes in the afternoon, with additional time advised for deadhead and traffic variables
- High Number of Underutilized Runs: 49 AM runs and 40 PM runs have been identified as less than 60% utilized in time and capacity; about half of these runs are deemed as potential excess and could be reduced; however, to achieve run and possible route reductions will require bell time adjustments

2. Bell Time Alternative Scenario Development Analysis:

An update to the proposed alternative bell time scenarios based on updated observations and findings from the route efficiency analysis revealed bell time alternatives should be consider to account for the following:

- Current Operational Structure and Challenges: ACPS continues to operate with a balanced two-tier system; however, further efficiency and maximization of

capacity is constrained by time, traffic, and other variables such as capacity transfers
- Unaccounted for Average Route Lengths and Standard Deviations: Recommendations include ensuring adequate operational time between tiers, with a suggested 60 minutes to account for average route lengths and the varying factors previously mentioned

3. High School Shuttles Efficiency and Financial Analysis:

A new study to evaluate the efficiency and costs associated with mid-day shuttles between the ACHS King Street and Minnie Howard campuses captured the following data and observations:

- Shuttle Data: 45 shuttles were reported as operating, with 5 of the shuttles transporting no students and supporting in a standby capacity; 7 of the 40 transporting shuttles were less than 60% utilized in capacity
- Onsite Observations: The King Street campus has staging and loading safety concerns with students crossing the bus loop, while Minnie Howard campus operations were well-structured and safely coordinated and monitored
- Financial Analysis: Consolidating underutilized shuttles, optimizing schedules, and leveraging the master schedule to minimize the total number of shuttles (targeted at reducing 8 shuttles) is estimated to save approximately $53,300 annually

4. Rezoning Transportation Impact Analysis:

In a future project phase, a new study will be conducted to evaluate the transportation impact of ACPS' selected school rezoning scenario upon completion of the rezoning study by another vendor.

Overarching Recommendations:

The following recommendations have been made for ACPS from the 2023-24 and 2024-25 transportation studies.

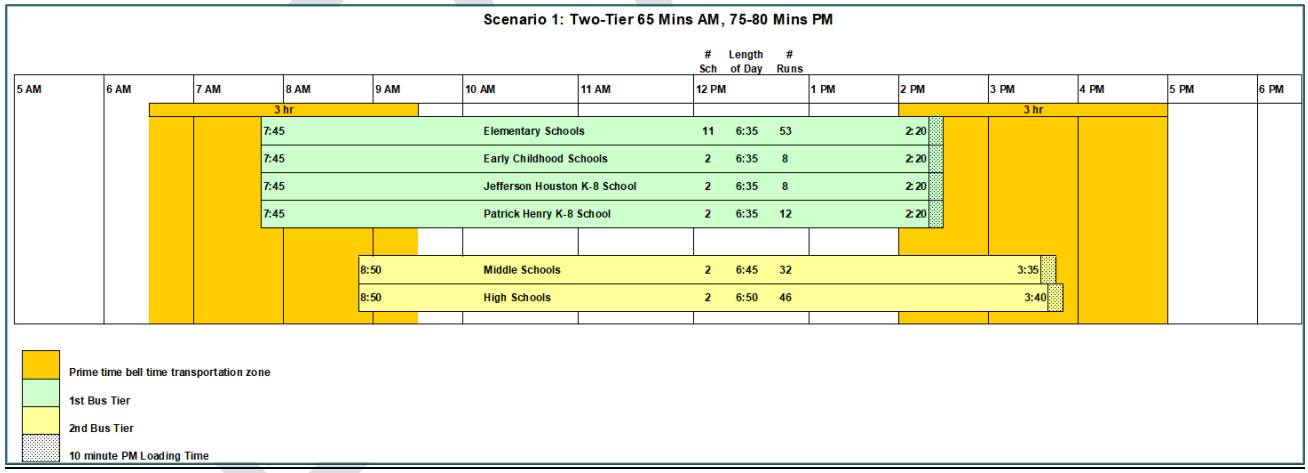
1) **RouteYield™ Analysis:**
   a) Consolidate as many underutilized runs and routes to improve efficiency by:
      i) Reviewing all runs with less than 60% time and capacity utilization and consolidating any operating among the same schools and feeder patterns
      ii) Most importantly, ensuring adequate operational time between bell time tiers, considering deadhead and traffic variables, and adjusting bell times accordingly

Route Yield Analysis Comparative Metrics Table

Metrics Category	2023-24 RouteYield Metrics	2024-25 RouteYield Metrics
Total Reported AM Riders	5898	5496
Total Reported PM Riders	5753	5627
Average AM Riders	36	42
Average PM Riders	36	32
Average AM Capacity Utilized %	46%	58%
Average PM Capacity Utilized %	51%	50%
Average AM Run Length	30 mins; std. dev. 34.45 mins	26 mins; std. dev. 13.3 mins
Average PM Run Length	23 mins; std. dev. 11.22 mins	24 mins; std. dev. 12 mins
Average AM Time Utilized %	31%	35%
Average PM Time Utilized %	41%	45%

2) **Bell Time Alternative Scenario Development Analysis:**
   a) Two updated scenarios were developed, each with its own benefits and challenges, but each of which took into account what average route length and standard deviation metrics necessary to enhance operational efficiency:
      i) <u>Scenario 1 Overview:</u> Two-tier system with 65 – 80 minutes between AM and PM tiers

Alternative Bell Time Scenario #1



(1) <u>Primary Benefits:</u>
   (a) *Enhance Service Quality by accounting for Actual Operational Route Metrics:* Achieves <u>*more than minimum required time*</u> between tiers based on route efficiency data to allow for greater on-time performance of AM and PM runs

(b) *Minor Route Reduction to Combat Driver Shortage/Absenteeism:* With a full re-route of the system under proposed bell times, it is estimated that 5-7 routes could be reduced

(c) *Adequate Time to Account for Variables:* With more time between tiers, traffic, capacity transfer, and other variable challenges can be better mitigated

(2) Primary Challenges:

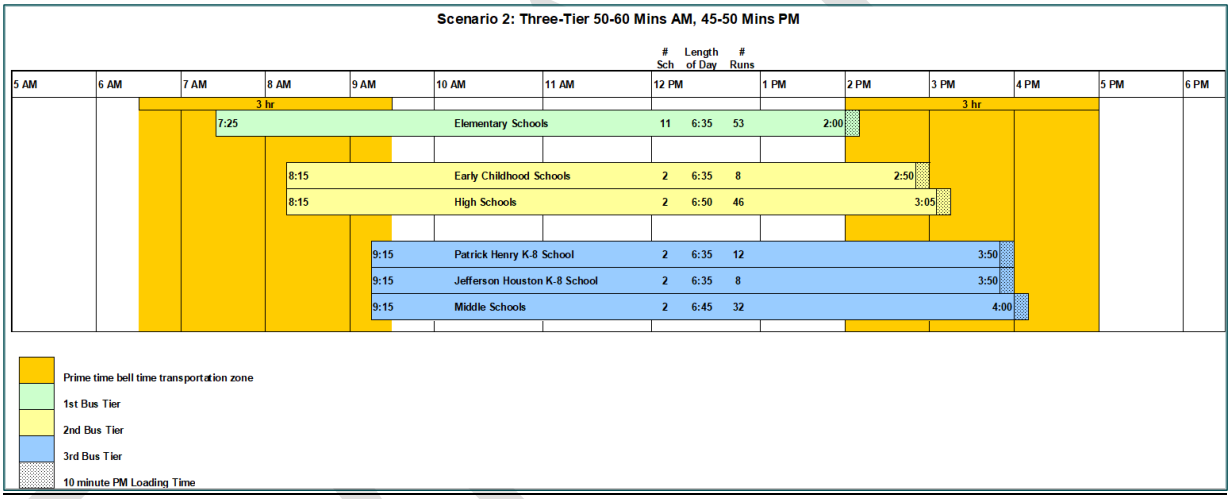
(a) *Somewhat Earlier Primary Start/End Times:* Elementary, early childhood, and K-8 schools will start and end 15 minutes earlier

(b) *Moderately Later Secondary Start/End Times:* Secondary schools will start and end 20 minutes later

(c) *Condensed Drop-off Window:* Students will likely be dropped off closer to the start bell, reducing the amount of time before school from 20-30 minutes in some instances, down to 10-15 minutes

ii) Scenario 2 Overview: Three-tier system with 45 – 60 minutes between AM and PM tiers

Alternative Bell Time Scenario #2



(1) Primary Benefits:

(a) *Improve Service Quality by Accounting for Actual Operational Route Metrics:* Achieves *minimum* suggested time between tiers based on route efficiency data to mitigate some of the on-time performance challenges on AM and PM routes

(b) *Moderate to Major Route Reduction to Further Combat Driver Shortage/Absenteeism:* With a full re-route of the system, there is a potential reduction of 20 buses, more conservatively estimated at 10 buses, removed from the system; conservative estimates are to prevent earlier than 6:30 AM pick-up times as well as to account for any increased student ridership which could occur in future years or any rezoning changes which may increase transportation eligibility and demand

(2) Primary Challenges:

(a) Significant Earlier/Later Start/End Times for Schools: 35-45 minute changes to start and end times for schools on the first and third tiers, which will have implications for staff contracts, student supervision, high school shuttles and extracurricular activities

3) **High School Shuttles Efficiency and Financial Analysis:**

a) Consolidate shuttles with less than 50% capacity utilization

b) Optimize shuttle schedules to reduce the number of required shuttles through coordination and collaboration on high school master schedules and capping of class sizes

c) Implement safety improvements at King Street campus and maintain efficient operations at Minnie Howard campus

d) Set target cost savings to achieve during the 2025-26 school year based on estimates for reducing currently underutilized shuttles

High School Shuttles Run and Metrics Listing

Bus	From School	Dismiss	To School	Class Bell	Arrive	Pickup	Dropoff	Duration	Riders	Bus Capacity	Riders/Seat	Eff. Capacity	Utilization
4	ACHS: King Street	10:28 AM	ACHS: Minnie Howard	10:41 AM	10:36 AM	10:36 AM	10:45 AM	9m	50	77	2	50	100.0%
7	ACHS: King Street	10:28 AM	ACHS: Minnie Howard	10:41 AM	10:30 AM	10:30 AM	10:37 AM	7m	51	77	2	50	102.0%
9	ACHS: Minnie Howard	1:48 PM	ACHS: King Street	2:01 PM	1:52 PM	2:05 PM	2:12 PM	7m	2	65	2	42	4.76%
11	ACHS: Minnie Howard	1:48 PM	ACHS: King Street	2:01 PM	1:30 PM	1:50 PM	2:00 PM	10m	50	77	2	50	100.0%
16	ACHS: Minnie Howard	1:48 PM	ACHS: King Street	2:01 PM	1:40 PM	1:54 PM	2:04 PM	10m	50	77	2	50	100.0%
21	ACHS: Minnie Howard	1:48 PM	ACHS: King Street	2:01 PM	1:40 PM	1:50 PM	1:58 PM	8m	48	77	2	50	96.0%
21	ACHS: Minnie Howard	10:28 AM	ACHS: King Street	10:41 AM	10:30 AM	10:30 AM	10:40 AM	10m	52	77	2	50	104.0%
27	ACHS: King Street	1:48 PM	ACHS: Minnie Howard	2:01 PM	1:30 PM	1:48 PM	2:01 PM	13m	50	77	2	50	100.0%
28	ACHS: Minnie Howard	12:05 PM	ACHS: King Street	12:05 PM	12:05 PM	12:11 PM	12:17 PM	6m	45	77	2	50	90.0%
40	ACHS: King Street	12:05 PM	ACHS: Minnie Howard	12:05 PM	11:50 AM	12:08 PM	12:14 PM	6m	51	77	2	50	102.0%
40	ACHS: King Street	10:48 AM	ACHS: Minnie Howard	10:41 AM	10:40 AM	10:40 AM	10:48 AM	8m	21	77	2	50	42.0%
41	ACHS: Minnie Howard	12:05 PM	ACHS: King Street	12:05 PM	12:05 PM	12:10 PM	12:15 PM	5m	51	77	2	50	102.0%
41	ACHS: King Street	10:28 AM	ACHS: Minnie Howard	10:41 AM	10:28 AM	10:28 AM	10:40 AM	12m	49	77	2	50	98.0%
42	ACHS: Minnie Howard	12:05 PM	ACHS: King Street	12:18 PM	11:50 AM	12:15 PM	12:20 PM	5m	51	77	2	50	102.0%
44	ACHS: King Street	12:05 PM	ACHS: Minnie Howard	12:18 PM	11:53 AM	12:13 PM	12:20 PM	7m	53	77	2	50	106.0%
44	ACHS: King Street	10:28 AM	ACHS: Minnie Howard	10:41 AM	10:25 AM	10:25 AM	10:38 AM	13m	27	77	2	50	54.0%
46	ACHS: King Street	12:05 PM	ACHS: Minnie Howard	12:18 PM	11:52 AM	12:10 PM	12:16 PM	6m	49	77	2	50	98.0%
46	ACHS: King Street	10:28 AM	ACHS: Minnie Howard	10:41 AM	10:30 AM	10:30 AM	10:38 AM	8m	51	77	2	50	102.0%
54	ACHS: Minnie Howard	12:05 PM	ACHS: King Street	12:18 PM	12:05 PM	12:10 PM	12:15 PM	5m	35	65	2	42	83.33%
54	ACHS: Minnie Howard	10:28 AM	ACHS: King Street	10:41 AM	10:30 AM	10:30 AM	10:33 AM	3m	38	65	2	42	90.48%
55	ACHS: King Street	12:05 PM	ACHS: Minnie Howard	12:18 PM	11:15 AM	12:10 PM	12:15 PM	5m	56	77	2	50	112.0%
57	ACHS: King Street	1:18 PM	ACHS: Minnie Howard	2:01 PM	1:40 PM	1:45 PM	2:05 PM	20m	41	77	2	50	82.0%
65	ACHS: King Street	1:48 PM	ACHS: Minnie Howard	2:01 PM	1:48 PM	2:01 PM	2:09 PM	8m	21	77	2	50	42.0%
82	ACHS: King Street	12:05 PM	ACHS: Minnie Howard	12:18 PM	12:00 PM	12:00 PM	12:30 PM	30m	40	77	2	50	80.0%
82	ACHS: Minnie Howard	12:18 PM	Satellite	12:48 PM	12:30 PM	12:30 PM	12:40 PM	10m	3	77	3	75	4.0%
84	ACHS: Minnie Howard	12:05 PM	ACHS: King Street	12:18 PM	12:03 PM	12:05 PM	12:08 PM	3m	20	77	2	50	40.0%
85	ACHS: King Street	1:48 PM	ACHS: Minnie Howard	2:01 PM	1:38 PM	1:42 PM	2:02 PM	20m	48	77	2	50	96.0%
86	ACHS: Minnie Howard	12:05 PM	ACHS: King Street	12:18 PM	12:05 PM	12:15 PM	12:20 PM	5m	57	77	2	50	114.0%
88	ACHS: Minnie Howard	1:48 PM	ACHS: King Street	2:01 PM	1:50 PM	1:58 PM	2:02 PM	4m	36	77	2	50	72.0%
91	ACHS: King Street	1:48 PM	ACHS: Minnie Howard	1:48 PM	1:17 PM	1:51 PM	1:54 PM	3m	52	77	2	50	104.0%
91	ACHS: King Street	10:28 AM	ACHS: Minnie Howard	10:41 AM	10:30 AM	10:30 AM	10:38 AM	8m	55	77	2	50	110.0%
97	ACHS: King Street	12:05 PM	ACHS: Minnie Howard	12:18 PM	11:51 AM	12:07 PM	12:12 PM	5m	52	77	2	50	104.0%
111	ACHS: King Street	10:28 AM	ACHS: Minnie Howard	10:41 AM	10:28 AM	10:28 AM	10:40 AM	12m	48	77	2	50	96.0%
112	ACHS: King Street	12:05 PM	ACHS: Minnie Howard	12:18 PM	11:50 AM	12:05 PM	12:13 PM	8m	62	77	2	50	124.0%
115	ACHS: Minnie Howard	1:18 PM	ACHS: King Street	2:01 PM	1:42 PM	1:57 PM	2:03 PM	6m	57	77	2	50	114.0%
123	ACHS: King Street	12:05 PM	ACHS: Minnie Howard	12:18 PM	11:55 AM	12:12 PM	12:16 PM	4m	14	65	2	42	33.33%
211	ACHS: King Street	1:48 PM	ACHS: Minnie Howard	2:01 PM	1:48 PM	1:58 PM	2:03 PM	5m	51	72	2	48	106.25%
211	ACHS: King Street	12:05 PM	ACHS: Minnie Howard	12:18 PM	12:05 PM	12:05 PM	12:17 PM	12m	54	72	2	48	112.5%
212	ACHS: King Street	1:48 PM	ACHS: Minnie Howard	2:01 PM	1:45 PM	1:46 PM	2:15 PM	29m	48	72	2	48	100.0%
214	ACHS: Minnie Howard	1:48 PM	ACHS: King Street	2:01 PM	1:48 PM	2:00 PM	2:02 PM	2m	8	72	2	48	16.67%
							Average	9m	43	76	2.03	50	85.98%
							Min	2m	2	65	2	42	4.0%
							Max	30m	62	77	3	75	124.0%
							Range	28m	60	12	1	33	120.0%
							Std Dev	6m	16	4	0.16	5	30.74%

High School Shuttles High-Level Financial Analysis

Cost Category	ESTIMATED ACPS Cost Per Shuttle/Student Metrics
Estimated Annual Total Cost for All Shuttles (Assumes 45 Shuttles)	$ $300,000.00
Estimated Annual Total Cost Per Shuttle	$ 6,666.67
Estimated Annual Total Cost Per Student (Assumes 1,697 Students Transported)	$ 176.78
Daily costs, if operating shuttles for 177 school days, are as follows: • Per day total shuttle costs = $1694.92/day • Per shuttle, per day = $37.66 • Per student, per day = $0.99	

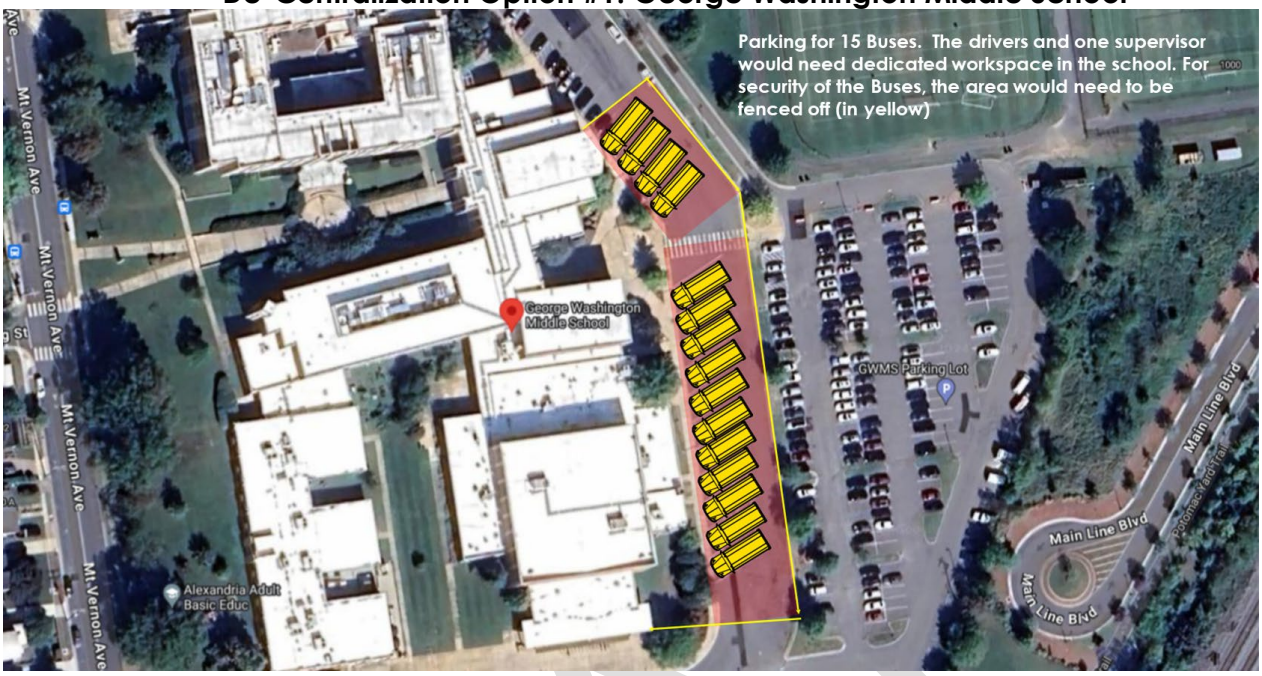
4) **Facility Study:**
   a) Facility needs are inextricably linked to the total number of buses, drivers, and employees that are required to operate the system; steps should be taken to optimize the system based on the route efficiency, bell time, and future rezoning recommendations so that ACPS can adequately determine the staffing and equipment needs of its transportation department in the immediate term and long-term
   b) As ACPS awaits direction and confirmation on which route efficiency, bell time, and rezoning recommendations it will implement, there are still immediate action steps that should be taken to improve working conditions within the existing, and less than adequate transportation facility, which include:
      i) Repairing all water leaks and associated damage
      ii) Monitoring and enhancing procurement, use, and storage of parts and equipment in order to find efficiencies in use of storage space
      iii) Requiring decluttering, cleaning, and housekeeping of unorganized and cluttered areas
      iv) Making repairs to all painted surfaces
      v) Making repairs to and updating the locker room/restroom in the shop
      vi) Repairing all lot lighting
      vii) Repairing all lot pavement

viii) Replacing carpet and furniture in drivers' break area, flex, and common spaces
ix) Removing mechanics from three office spaces downstairs and repurposing the space for administrative staff
x) Removing all food preparation/storage spaces from the shop work area

c) Due to a lack of other district-owned and/or publicly available spaces to procure, ACPS' Transportation Facility will have to be renovated in the existing space as it continues to operate simultaneously out of the same space; the following steps and considerations will need to be taken in order to make larger and more invasive repairs and renovations to the facility:
   i) Right-size the bus fleet to match operational needs so that excess fleet can be removed from areas surrounding the building, particularly the area east of and immediately adjacent to maintenance bays where buses are being parked and multi-stacked
   ii) If necessary, after right-sizing of the fleet, select one of the two most feasible decentralization options, at either George Washington or Francis Hammond Middle Schools, based on the operational needs and realities of those two schools in the year in which decentralization would be implemented, shifting 10-15 buses and drivers, and at least one (1) operations staff member to operate strategically out of one of these two locations

Current Facility Bird's Eye Overview of Challenges and Opportunities for Efficiency

De-Centralization Option #1: George Washington Middle School



De-Centralization Option #2: Francis C. Hammond Middle School

Conclusion:

TransPar would be remiss if it did not state that the ACPS Transportation Department is operating at commendable levels given the many constraints and operational variables and challenges it faces on a daily basis. The support and cooperation of the entire Transportation Team have made the results of these studies possible and demonstrate a dedicated desire to improve operations if given the resources and support to implement key recommendations.

The studies have provided comprehensive analyses and recommendations to address ACPS' current and future-state transportation demands and challenges. Each recommendation seeks to improve upon the service quality, efficiency, and cost-effectiveness of the entire operation.

Overall staffing levels, resource utilization, and facility needs cannot be strategically set without a right-sizing of the operation, which can only be achieved through ACPS deciding its desired goals and/or required service models by taking into account:

- The reality of its driver staffing and absenteeism challenges
- Ability for routes to meet on-time performance expectations given operational variables such as traffic and capacity transfers
- The limitation of its options regarding facility space, particularly as the current facility is less than adequate to support higher-performing operations
- An ever-increasing budget due to growing demand for more transportation services (e.g. high school shuttles)

As such, ACPS will need to implement, at minimum, route efficiency and bell time recommendations as soon as operationally feasible in order to right-size the operation and subsequently make staffing, facility, and cost decisions that cannot successfully and sustainably be made otherwise.

TransPar is appreciative of its partnership with the district and looks forward to supporting ACPS in the next phase of work, which is also irrevocably tied to the long-term sustainable success of transportation operations, which is evaluating the impact of future school rezoning on transportation. It should be noted here that the result of the rezoning work being performed by another vendor will have a correlative and direct impact on the recommendations made within TransPar's studies, which TransPar will note and highlight for ACPS during its analysis of the selected rezoning scenario.

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