

Fairfax County School Board  
Transportation Task Force

# **Final Report**

March 10, 2008

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## Executive Summary

The Transportation Task Force (TTF) was chartered by the Fairfax County School Board to offer community perspectives as input to the conduct of a transportation reengineering analysis, to provide a workable and practical bell schedule that would achieve later start times for high schools and to recommend changes to improve the services provided. The sixty-eight (68) people appointed to the TTF to do this work were drawn from every district in the county and from a number of countywide and community organizations, and represent a very broad cross-section of Fairfax County. The school system was well represented, with twenty-three (23) employees of the Fairfax County Public School System (FCPS) as members – five of whom are Principals. The TTF also included seven other Fairfax County government employees, as well as three FCPS high school students.

Approaching its task in two phases and working together in committees, subcommittees, and as a Committee of the Whole, the Task Force met dozens of times over its six-month working life. The members of the Task Force volunteered thousands of hours to gather, share, review and discuss thousands of pages of pertinent information. After carefully considering all of this information, the Task Force is proposing a number of changes to the services provided by the FCPS Transportation Department. These service parameters should improve service and, importantly, reduce system costs as well. These are (verbatim):

- Retain the “Exception to Ride” program
- “Civil twilight” should be respected but not as an absolute barrier. Elementary school (ES) bus runs may start before civil twilight, but not more than ten days each academic year, and not by more than ten minutes even then.
- ES students should not ride the bus to their within-boundary base-school for more than 45 minutes.
- Middle school (MS) and high school (HS) students should have the same bus ride time limitations
- MS and HS students should not ride the bus to their within-boundary base-school for more than 60 minutes
- ES students should arrive no later than five minutes before school and no earlier than 25 minutes before school – a 5-25 minute arrival/drop off window – and are to be permitted to exit the bus and enter the school immediately upon arrival.
- HS and MS student arrival/drop off window is to be 10 – 25 minutes before school, with immediate entry.
- “Grandfathering” for school boundary changes may be permitted, but for not more than a single year following the changes.
- “Grandfathering” should not be used for non-boundary program changes.
- Current home-to-school walking distances should not be changed.
- Transportation should optimize bus stop placements by making better use of the permissible walking distance, up to, but not exceeding one-half (1/2) mile for ES students, with the goal being to reduce the number of bus stops and improving transport efficiency and run length.

- Transportation should optimize bus stop placements by making better use of the permissible walking distance, up to, but not exceeding three-quarters of mile for MS and HS students, with a goal of reducing the number of bus stops and improving transport efficiency and run length.
- ES students should not ride with MS or HS students, except for current rare and unusual circumstances related to centralized pick-ups, such as TJHSST.
- MS and HS students may ride the same bus at any time.
- Transportation should not be provided to a GT Center when the base school has a GT Center.
- The use of centralized pickup locations should be expanded for all students attending non-mandatory out-of-boundary programs.

In addition, we believe that there are several larger-scale initiatives that offer possibilities that should be explored. These initiatives, such as Consortia and the “Cool Counties Initiative,” are beyond the purview of this Task Force. While we reviewed and discussed them in this report, we had neither the time nor the expertise to study them in the depth needed to support anything more than a recommendation to the School Board for further study.

Like the School Board, the Task Force believes that later start times would be beneficial for adolescents, particularly high school students. This, in turn, serves FCPS Strategic Goal 6.7 to provide, “a safe and healthful learning environment.” It also helps FCPS meet its Student Achievement Goals to ensure that students, “achieve their full academic potential in the core disciplines,” (1.1), and, “make healthy and safe choices” (2.8).

In Phase I, we developed five bell schedule alternatives that would provide these later start times. In Phase II, the TTF spent almost three months identifying the impacts of each of these alternatives on FCPS students, on FCPS employees and on the greater Fairfax community. These impacts – positive and negative (most impacts cut both ways) – informed our final decisions. As would be expected in any group, particularly one as large and intentionally diverse as the TTF, there was disagreement on the magnitude of the impacts, on whether an impact was positive or negative or both, and – most critically – as to whether the overall positive benefits of later start times outweighed the negative effects. Yet, after much discussion the Task Force determined that later HS and MS start times can be achieved in an acceptable way, and selected a bell schedule that does this.

The proposed bell schedule continues the current three-tier system. It begins with Elementary Schools (ES), follows with HS and ends with MS. To balance the tiers there are ES in each tier (ES would be split roughly 55%, 25% and 20% between tiers for balance today). Transportation should put as many ES as possible in tiers 1 and 2, while keeping HS in tier 2. The proposed bell schedule to provide later start times for adolescents is:

Tier	School	Start Times	End Times
1	Elementary	7:50 – 8:10	2:30 – 2:50
2	High	8:35 – 8:55	3:25 – 3:45
3	Middle	9:20 – 9:40	4:10 – 4:30

Note that these start/end time windows are approximate and not rigid times. Again, the FCPS Transportation Department should develop rolling bell schedules that start as many elementary schools as possible in Tier 1 and Tier 2, while balancing the tiers and starting high schools as close to the beginning of the tier 2 window so that they can end by 3:30 p.m., preferably even before. Elementary schools placed in the first tier should be those with the shortest routes and the fewest bus riders so as to minimize problems with civil twilight.

This decision by the Task Force, like virtually every formal decision the body made, was not unanimous. This should not be surprising, given the size and diverse make-up of the Task Force. In fact, it's quite healthy and makes for better decisions, and shows that the School Board appointed a widely varied cross-section of the county. For all that, the decision was strongly supported nonetheless. In sum, after much discussion of the impacts and the selection of a bell schedule that provides later start times, the consensus reached by the members of the Transportation Task Force is:

*We believe the bell schedule we propose, when combined with the service parameter changes we recommend achieves these beneficial later start times for the adolescents in Fairfax County in a way that is acceptable to the community.*

## Organization and Process

The Transportation Task Force (TTF) was chartered by the Fairfax County School Board to offer community perspectives as input to the conduct of a transportation reengineering analysis. The TTF Charter is at Appendix A. The sixty-eight (68) people appointed to the TTF were drawn from every district in the county and from a number of countywide organizations, such as the Fairfax County Federation of Citizens Associations, and represent a very wide cross-section of Fairfax County. The school system was well represented in the group, with twenty-three (23) employees of the Fairfax County Public School System (FCPS) as members – five of whom are principals. The TTF also had seven other Fairfax County employees, including two Police Department Commanders, as well as three FCPS high school students. The TTF Membership list is at Appendix B.

Working as a Committee of the Whole, as members of at least two of the six large working committees and serving on two or more subcommittees, TTF members met dozens of times during the TTF's six -month working life. The schedule of general TTF meetings is at Appendix C. A summary of attendance at those meetings is at Appendix D. At those meetings, we looked at service parameters, large-scale organizing and re-organizing possibilities and a variety of bell schedules. We reviewed what had been done elsewhere, and what had been done in Fairfax County in the past. We met with outside experts, and had active participation by FCPS staff. TTF members gathered and shared dozens of studies, documents, papers, surveys and articles. We looked over information from other jurisdictions and shared each committee's and subcommittee's work with those not on that committee or subcommittee. In all, we reviewed and discussed all of this information – comprising many thousands of pages and more than just the 100 or so documents posted on our web site – and they were a tremendous help. Our primary references are posted on the Transportation Task Force web site: <http://www.fcps.edu/fts/taskforce07/index.htm>, and may be viewed there.

One over-arching aspect of the Task Force's work is the benefit to adolescents of later start times. Note that this is different from simply getting more sleep – though more sleep is not an unworthy goal itself. The benefits of later start times are accepted by the School Board and by most of the Task Force. Where TTF members differ in this area is with regard to how important these benefits are. That's something each Task Force member had to decide for him or herself in weighing the positive and negative aspects of the changes being discussed. To help the readers of this report understand this issue somewhat better, a brief compendium of information regarding the benefits of later start times is at Appendix E.

The TTF approached its task in two phases. In Phase I, the TTF split into rough thirds and formed three committees to look at various ways to push back start times. The "Slide" Committee looked at sliding the current schedule – intact – back later in the day. The "Flip" Committee looked at ways to flip or re-shuffle the existing three tiers to move high schools (HS) back. The third "Tweak" Committee looked at ways to change the transportation system to improve service and reduce costs. Membership of the committees is at Appendix F. The formal definitions of Flip, Slide and Tweak that were used are at Appendix G.

A detailed discussion of the Slide and Flip Committees and their work is in the Bell Schedule section of this report. A discussion of the Tweak Committee can be found in the Service Parameter section (which begins on page 8). Each of these committees made two formal presentations to the TTF. Their final reports are at Appendices H, I and J, respectively.

From those reports the TTF voted to create a set of five possible options for achieving later start times. The five options are at Appendix K. Looking at the impacts of each of those five options was Phase II of the Task Force's work.

As the TTF began Phase II, it took some time to look at changes to the service parameters used by the FCPS. After several meetings and much discussion, the TTF adopted numerous service parameter changes. These changes will improve the service provided, and tie directly into the bell schedule that the TTF also proposes. One prime feature of these service parameters is that they should reduce system costs. This is accomplished, in part, by reducing the number of stops each bus will make, thereby shortening the time needed to run each route and possibly reducing the number of buses needed overall. These cost effects were discussed with Transportation Department staff, but Transportation was not able to provide final cost and savings estimates to the Task Force. These service parameter changes are detailed in the Service Parameter section of this report, and presented again, with voting by item, at Appendix L.

In Phase II, the TTF again split its entire membership into thirds and formed three new committees. Each of the three was charged with listing the impacts caused by adopting each of the five options – along with the pluses and minuses – for either: (1) the community as a whole – Community Impact Committee (CIC); (2) FCPS employees – Employee Impact Committee (EIC); and students – Student Impact Committee (SIC). Membership of the committees is at Appendix K. These committees spent almost three months on this task – and some still felt rushed, even with a one-month time extension – and provided the TTF with a very comprehensive look at the potential impacts of each of the five options it was considering.

The Task Force did not attempt to weigh or rate each impact as a group. This was impossible to do comprehensively as each TTF member is an individual with his or her own priorities and would weigh impacts differently. Blending these differences would remove their meaning, so it wasn't done. Instead, and for that reason, the impacts developed by the three TTF Impact Committees are listed and described in their reports. Readers are encouraged to decide for themselves the importance of each impact listed. The three Impact Committee reports are at Appendix L.

After looking at numerous possible bell schedules and discussing the potential impacts of its five preferred options in great detail, the Task Force determined that later HS and MS start times can be achieved in an acceptable way, and it selected a bell schedule that does this. The proposed bell schedule sticks to the current three-tier system, as it must. It begins with Elementary Schools (ES), follows with High Schools (HS) and ends with Middle Schools (MS). (Note that, to balance the tiers, there must be ES in each tier, with the majority in tiers 1 and 2.) The proposed bell schedule to provide later start times for adolescents is:

### Final Proposed Bell Schedule – Later Start Times

Tier	School Level	Start Times	End Times
1	Elementary	7:50 – 8:10	2:30 – 2:50
2	High	8:35 – 8:55	3:25 – 3:45
3	Middle	9:20 – 9:40	4:10 – 4:30

Note that these start/end time windows are rolling time-frames, and as approximate times should not be considered rigid. The FCPS Transportation Department should work within these to its best advantage. For example, to the extent possible, high schools should start toward the beginning of their window so that they can end as close to 3:30 P.M. as possible, if not before. Similarly, the elementary schools placed in the first tier should be those with the shortest routes and the fewest bus riders so as to minimize the impact of civil twilight on the routes.

The TTF also looked at larger initiatives that would affect the FCPS Transportation system in a dramatic fashion. These include alternative transportation methods, such as the “Cool Counties Initiative,” and the use of Consortia to decentralize special courses and programs. These initiatives are outside of the purview of the TTF, and we did not examine them in great detail. However, we do believe that they merit further study by the School Board and the FCPS. These are detailed at Appendix Q.

This decision by the Task Force, like every formal decision the body made, was not unanimous. This should not be surprising, given the size and diverse make-up of the Task Force and the complexity of the issue. In fact, it’s quite healthy and makes for better decisions, and shows that the School Board appointed a widely varied cross-section of the county. For all that, the decision for a later start time bell schedule was strongly supported. Of those eligible to vote and voting on a bell schedule, more than 80 percent favored the proposed bell schedule over making no change. The final vote was 22 for the change, 5 for making no change, with 13 abstentions. These votes were taken by roll call. The results are included in the report at Appendix R.



## Service Parameter Recommendations

The Task Force approached service parameters knowing that transportation is “an exercise in constrained optimization” (Tom Platt, MPS, TTF meeting of 11/19/07). He noted that Transportation may seem simple – it’s just buses and time – but the reality is far from simple. The FCPS has more than 5,000 daily bus runs serving 167,000 students who attend more than 200 schools. One fundamental question before the Task Force was, “what service is to be provided?” And this question itself has many pieces, including: who gets transportation, how long can or should they ride, how far can they be asked to walk to school or to the bus stop, with whom can they ride, at what times of day, how long before school can they be dropped off, what is the earliest they can be picked up? In setting service parameters, the Task Force answered each of these questions and more.

The Task Force took formal votes on service parameters at several meetings. As noted earlier, these votes are detailed at Appendix L. The specific parameters the Task Force addressed were gathered by the Phase I committee chairs from their committees. For the service parameters shown, there was a consensus in every case, stronger in some than in others. When the consensus was weak or conflicting, further discussion usually led to a solution. For example, regarding the use of civil twilight, the Task Force does not believe it should be an absolute barrier (79 percent said, “no”). It also, however, does not want civil twilight to be completely ignored for within-boundary base-school ES (72% want it respected). The compromise reached is to have civil twilight respected – i.e., avoid picking up ES kids before sunrise - except for two weeks or so in December and early January, when flexibility of up to ten minutes is acceptable. It should be noted that the flexibility created by this single exception to this single service parameter avoids a \$17 million cost increase that another service parameter (a 45 minute ES bus ride limitation) and the proposed bell schedule would have created. It should also be noted that the FCPS currently has 31 ES bus runs that start before civil twilight on occasion.

The Task Force addressed each of the service parameters individually. There was extensive discussion in every case – in committees, subcommittees, and at several general membership meetings. The service parameters recommended by the Task Force are (verbatim):

- Retain the “Exception to Ride” program
- “Twilight time” should be respected but not as an absolute barrier. Elementary School bus runs may start before civil twilight, but not more than ten days each academic year, and not by more than ten minutes even then.
- ES students should not ride the bus to their within-boundary base-school for more than 45 minutes.
- MS and HS students should have the same bus ride time limitations
- MS and HS students should not ride the bus to their within-boundary base-school for more than 60 minutes
- ES students should arrive no later than five minutes before school and no earlier than 25 minutes before school – a 5-25 minute arrival/drop off window – and are to be permitted to exit the bus and enter the school immediately upon arrival.

- HS and MS student arrival/drop off window is to be 10 – 25 minutes before school, with immediate entry.
- “Grandfathering” for school boundary changes may be permitted, but for not more than a single year following the changes.
- “Grandfathering” should not be used for non-boundary program changes.
- Current home-to-school walking distances should not be changed.
- Transportation should optimize bus stop placements by making better use of the permissible walking distance, up to, but not exceeding one-half (1/2) mile for ES students, with the goal being to reduce the number of bus stops and improving transport efficiency and run length.
- Transportation should optimize bus stop placements by making better use of the permissible walking distance, up to, but not exceeding three-quarters of mile for MS and HS students, with a goal of reducing the number of bus stops and improving transport efficiency and run length.
- ES students should not ride with MS or HS students, except for current rare and unusual circumstances related to centralized pick-ups, such as TJHSST (Thomas Jefferson High School for Science and Technology).
- MS and HS students may ride the same bus at any time.
- Transportation should not be provided to a GT Center when the base school has a GT Center.
- The use of centralized pickup locations should be expanded for all students attending non-mandatory out-of-boundary programs.

In early November 2007, the Task Force was surveyed via an online software program on a number of service parameters. Because this was done over the Internet and not in a general session, the preferences stated were not binding choices or votes. Due to technical difficulties, not all TTF members were able to access the online survey. Twenty-one were able to complete the survey, and the results informed the TTF discussion of service parameters. The results of the survey are at Appendix S.

SCHOOL BOARD TRANSPORTATION TASK FORCE

## Bell Schedules

### ***Recommended Bell Schedule***

The Transportation Task Force proposes the following bell schedule for the FCPS:

Tier	School	Start Times	End Times
1	Elementary	7:50 – 8:10	2:30 – 2:50
2	High	8:35 – 8:55	3:25 – 3:45
3	Middle	9:20 – 9:40	4:10 – 4:30

The genesis of this bell schedule is discussed in detail in the following sections.

### ***Background on Current Bell Schedules***

School start and end times (“bell schedules”) were provided by FCPS Transportation Services to the TTF for the 2007-2008 school year. The first students to be delivered each day are high school students. Eighteen schools, out of a total of 21 high schools (“HS”) and 4 secondary schools (“SS”), start at 7:20 a.m. and end at 2:05 or 2:10 p.m.<sup>1</sup> Six HS or SS start at 7:25 or 7:30 a.m. and end at 2:10 or 2:15 p.m. The length of the school day varies by HS/SS. In six schools, the day is scheduled to last 6 hours and 40 minutes; in 10 schools it is 6 hours and 45 minutes, and 8 schools run 6 hours and 50 minutes.

FCPS buses are scheduled to drop off high school students at least 20 minutes, and as much as 35 minutes, prior to the start of school in the morning. This allows the buses to leave the high schools and pick up the next load of students, generally middle school students. The HS/SS students are generally unsupervised in the schools during this pre-school period.

Thomas Jefferson High School for Science and Technology (“TJHSST” or “TJ”), which draws students from all over Northern Virginia, uses a bus depot system. In this system, a student takes her or his neighborhood bus to their base HS/SS; then, another bus takes students to TJ from that base school. TJ starts at 8:30 a.m. and ends at 3:50 p.m., a 7 hour and 20 minute day.

Ten of the 26 middle schools (“MS”) in FCPS start between 7:20 and 7:30 a.m.; five start between 7:35 and 7:45 a.m.; and nine start between 7:50 and 8:05 a.m. Poe MS starts at 8:30 a.m. and the MS portion of South County Secondary starts at 9:17 a.m. MS students are generally delivered to school about 10 minutes prior to the start of school. MS students are supervised before school starts. Most MS days are 6 hours and 50 minutes in length, although they range from 6 hours and 45 minutes to 7 hours.

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<sup>1</sup> High schools include grades 9 through 12, while secondary schools include grades 7 through 12. Most middle schools include grades 7 and 8.

FCPS has 137 elementary schools (“ES”) teaching grades kindergarten through six.\* Three schools start at or before 8 a.m. Thirty-eight schools start at or between 8:00 and 8:30 a.m.; 41 schools start at or between 8:35 and 8:55 a.m.; and 55 schools start at or after 9:00 a.m. Most ES days are 6 hours and 40 minutes in length, although several are 6 hours and 35 minutes long. ES students are generally delivered to school about 10 minutes prior to the start of school. ES students are supervised before school starts.

(\* Glasgow, Poe and Holmes MS include grades 6-8, and elementary schools that feed into those schools include grades K-5.)

The following chart illustrates the current FCPS morning bell schedule:

**Current FCPS School Start Times (2007-2008)**

Schools	7:20	7:45	8:00	8:15	8:30	8:45	9:00	9:15	9:30
<b>ES</b>		XX							
<b>MS</b>	XXXXXXXXXXXXXXXXXXXX					X			X
<b>HS</b>	XXXXX				X				

(XXXX indicates the range within which that school level starts across the County.)

**Bell Schedule Cost Factors**

TTF members were concerned about the costs of current bus operations and the potential cost impacts of any Task Force recommendations on changing bell schedules. While the TTF was provided with little bus operations cost data (except for the estimate provided to the Slide Committee, which is discussed below), the TTF was briefed on factors that generally can increase or decrease the costs of school bus operations. The TTF also reviewed the two previous studies by Management Partnership Services, Inc. (“MPS”) for FCPS. These studies are “K-12 Pupil Transportation Services Bell Time Analysis for FCPS, January 5, 2006” and “Transportation Options & Phase 2 Bell Time Analysis for FCPS, December 2006.” Both can be found on the TTF web site. The TTF used this information on cost factors in its consideration of bell schedules. Some of these factors include:

- **Total Elapsed Time**

This is the total elapsed time from when the first students are delivered to schools in the morning to the time when the last students are delivered to schools in the morning. The shorter the total time window for deliveries, the more buses are needed to be on the road at the same time, increasing operating costs. The same factor affects the cost of transporting students from school to home in the afternoon.

Currently, the earliest school starts at 7:20 a.m. (most HS) and the last school starts at 9:25 a.m. (Fort Belvoir ES). This results in a total morning start time window of 2 hours and 5 minutes (one hour and 55 minutes excluding Fort Belvoir ES). However, since HS students do not have to be supervised prior to the start of school, FCPS buses have been delivering HS students 20 to 35 minutes before the start of school, substantially increasing the total delivery window to 2 hours and 25 minutes. In the afternoon, the first students are picked up at 2:12 p.m.

(Fairfax HS), the latest ES pickup is 4:05 p.m. (Fairfax ES), and the last students are picked up at 4:15 p.m. (MS students at South County SS), for a total elapsed time of 2 hours and 3 minutes in the afternoon (1 hour and 53 minutes, excluding the unique MS students at South County SS).

A bell schedule that provides a longer total elapsed time from first school bell to last school bell is cheaper to service than a bell schedule that compresses the total time window, as each bus can make more runs and fewer buses are needed in total.

- **Time between Deliveries**

This is the elapsed time between when a bus delivers a load of students to a school and when that bus delivers its next load of students to their school. It is related to the total elapsed time of the bell schedule. FCPS tries to design bus runs (a series of linked routes) so that a bus can cover a route and deliver the students to school in time for the starting bell, then have time to drive (“deadhead”) to the start of another route, cover that route and deliver those students to their school in time for the starting bell, deadhead again and cover a third route. For example, a bus may drive a route and pick up HS students, deliver them to HS at 6:45 a.m. (early for a 7:20 a.m. start time), then deadhead to a neighborhood and pick up MS students along a route for delivery for a 7:30 a.m. school start time, and then deadhead out to a neighborhood, pick up ES students, and deliver them in time for an 8:15 school start time. FCPS currently averages about 2.5 routes per bus run, which is very efficient. (However, FCPS bus runs have been linked so tightly that there is little spare “buffer” time between routes, which magnifies the impact of a late bus on later schools in its run.)

As noted earlier, the more routes a single bus can cover in a morning or afternoon, the fewer buses are needed to deliver students, thereby reducing costs. A bell schedule with sufficient time between the start times of various schools to allow for linking bus routes is cheaper to operate than a bell schedule that is so compressed that few buses can serve multiple schools in linked routes.

- **Tiers**

Because of the time required to deadhead and then run a route, school start times are often designed in “tiers” to allow linking of bus routes into runs. For example, in FCPS, HS generally starts first on Tier 1; time is allowed for deadheading and picking up MS students along a route; then MS starts next in Tier 2; time is allowed for deadheading and picking up ES students along a route; and then ES starts last in Tier 3.

- **Rolling Bell Schedules**

Over time, FCPS has optimized the timing of individual bus routes to collapse as much as possible the time between one school delivery and the next. This has resulted in HS being the only tight tier, with all HS starting from 7:20 a.m. to 7:30 a.m. (with the exception of TJ). Twenty-four of the 26 MS start over the period 7:20 a.m. to 8:05 a.m., so MS have “rolling bell schedules” starting in Tier I and continuing into Tier 2. ES starts almost continuously throughout a very loose Tier 3, extending from 8 a.m. until 9:25 a.m.

- **Full Tiers**

An efficient school bus operation will “balance” bus route loads across tiers, i.e., have roughly the same number of buses operating in each tier. In a simple example with three tiers, if each bus were able to link three routes and deliver students to three schools, each tier would have the same number of buses operating during that tier. There would be no underused buses. This would be an efficient bus system.

In FCPS, February 2007 data show that there were 1,376 ES morning bus runs; 515 MS morning bus runs; 552 HS morning bus runs; 129 secondary school (HS and MS in same school) morning bus runs; and 113 “combo” bus runs (carrying HS and MS students to separate HS and MS that are located near to each other). Thus, ES bus runs are half of the total number of bus runs. Therefore, to balance tiers, FCPS cannot have one tier that is only ES. Rather, if these 2,685 runs are allocated across three tiers, that would mean 895 runs per tier. Neither HS nor MS forms a complete tier by itself in FCPS, while ES runs are sufficient to form one and one-half tiers. Thus, the FCPS tiers are currently balanced roughly as follows - Tier 1: HS/SS and MS; Tier 2: MS and ES; Tier 3: ES.

- **Civil Twilight**

“Civil twilight” is defined by the US Naval Observatory to, “begin in the morning and to end in the evening when the center of the sun is geometrically 6 degrees below the horizon. This is the limit at which twilight illumination is sufficient, under good weather conditions, for terrestrial objects to be clearly distinguished... In the morning before the beginning of twilight time and in the evening after the end of twilight time, artificial illumination is normally required to carry on ordinary outdoor activities. Real darkness, however, ends sometime prior to the beginning of morning twilight time, and begins sometime after the end of evening twilight time.”

Observing civil twilight with regard to schools is not required in Virginia or FCPS statutes, regulations or policies. However, when changes to bell schedules were considered previously in FCPS, community members and school safety staff believed it unsafe to ignore twilight time entirely and have ES going to or from school “in the dark.” They felt that a civil twilight constraint was reasonable for discussions of what time it is light enough for ES to be picked up or dropped off. FCPS currently has 31 ES bus runs that pick up some students before civil twilight at times during the school year.

The TTF basically agreed that civil twilight matters (by a slight majority), but did not believe civil twilight should represent an absolute requirement or barrier. As an absolute requirement, civil twilight would be very costly with ES in the first tier. The TTF decided that civil twilight constraints should be relaxed by several minutes (ten or fewer) for two weeks or so each winter. This constraint is relevant to the design of bell schedule alternatives.

## ***Committee Recommendations on Alternative Bell Schedules***

- **SLIDE committee**

The Slide Committee undertook the task of designing and evaluating bell schedules that would “slide” the current pattern of school start/end times so that HS could start later than it currently does. The Slide Committee recommended that a “slide” bell schedule alternative should start HS around 8 a.m., but felt that ES start times should slide by no more than 10 minutes (so the last ES would start at 9:35 instead of 9:25). A later start would dictate a later end and this was found to cause unacceptable problems. This Slide bell schedule would collapse the total elapsed time from earliest morning bell to last morning bell to one hour and 35 minutes from the current elapsed time of 2 hours 5 minutes. The FCPS Transportation Department did a rough calculation and estimated that reducing the delivery window in this way would require on the order of 500 additional buses, resulting in an annual operating cost increase of approximately \$42 million.

As a result, the Slide Committee recommended to the TTF that the task force not continue to investigate a slide bell schedule alternative. The Slide Committee’s briefing to the TTF enumerates the thoughts of the Slide Committee members in evaluating the costs and negative impacts of the slide bell schedule. These points were not adopted formally by the Slide Committee.

The Slide Committee was concerned about the increase in operating costs; the negative impacts of pushing ES school even later; and the negative impacts of starting HS later.

- **FLIP Committee**

The Flip Committee undertook the task of designing and evaluating bell schedules that “flipped” the current pattern of school start/end times so that HS could start later than it currently does. The current FCPS bell schedule is most generally HS first, then MS, then ES.

The Flip Committee began by looking at the bell schedule scenarios that had been considered in the two MPS studies of 2006, the School Board Scope of Work for the MPS studies; the 1998 FCPS Task Force; the Madison HS proposed pilot, 2001; and bell schedules considered by Arlington County. From this, the committee developed two alternatives: Flip 1 was basically ES/HS/MS; Flip 2 was ES/MS/HS. The start times, times between tiers, total elapsed time, use of rolling bells, and balancing of tiers in the two schedules were designed with the intention of minimizing the operating costs of the alternatives.

The Flip Committee then did a preliminary evaluation of the two alternatives. The committee listed all of the factors that the bell schedules might impact; the members then rated the two bell schedules against the current bell schedule based on those impacts. Alternatives were rated against the current bell schedule for their potential impacts on the following factors: student sleep biology; students transported during “light;” student before-school and after-school supervision, and other impacts on families; after-school activities; community sports; coaches; bus run duration; cost of bus operation; bus operations; HS students’ jobs; school staff; and neighborhoods near schools.

The Flip Committee members then selected their preferred alternative. The committee voted that Flip 2 (ES/MS/HS) was slightly preferable to Flip1 (ES/HS/MS), based on an assumption that HS sports team practices and other HS activities could be held in the morning before classes start. The Flip Committee also voted that if HS sports and activities were later shown not to be possible or viable before school (through further investigation in Phase II of the TTF effort); the Flip 1 schedule was preferred by the committee. And this is just what happened. The following chart shows the bell schedule alternatives that the Flip Committee recommended to the TTF for further study and analysis:

### Flip Committee Recommended Bell Schedule \*

School Start Times (AM)				School End Times (PM)		
school	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3
	7:50-8:10	8:35-8:55	9:20-9:40	2:30-2:50	ES 3:15-3:35 MS/HS 3:25-3:45	ES 4:00-4:20 MS/HS 4:10-4:30
<b>ES</b>	<b>XXXX</b>	xxxx	x	<b>XXXX</b>	<b>Xxxx</b>	x
<b>MS</b>		<b>XXXX</b>	xx		<b>XXXX</b>	xx
<b>HS/SS</b>		xx	<b>XXXX</b>		<b>Xx</b>	<b>XXXX</b>
total time span: 1 hour 50 minutes				total time span: 2 hours		

(\* assuming HS sports and activities could occur before school starts)

### Flip Committee Alternative Bell Schedule

School Start Times (AM)				School End Times (PM)		
school	Tier 1	Tier 2	Tier 3	Tier 1	Tier 2	Tier 3
	7:50-8:10	8:35-8:55	9:20-9:40	2:30-2:50	ES 3:15-3:35 MS/HS 3:25-3:45	ES 4:00-4:20 MS/HS 4:10-4:30
<b>ES</b>	<b>XXXX</b>	xxxx	x	<b>XXXX</b>	<b>Xxxx</b>	x
<b>MS</b>		xx	<b>XXXX</b>		<b>Xx</b>	<b>XXXX</b>
<b>HS/SS</b>		<b>XXXX</b>	xx		<b>XXXX</b>	xx
total time span: 1 hour 50 minutes				total time span: 2 hours		

Following the Flip, Slide and Tweak committee reports, the TTF addressed service parameters. Those decisions are detailed in the Service Parameter section. The TTF then took the recommendations of the committees on bell schedules, adjusted them for the decisions from the discussion of service parameters, and developed five alternative bell schedules for further TTF consideration. Option A is similar to the Flip Committee's recommended option (above). Option B is much like Option A, except that the entire schedule is moved 20 minutes to a 7:30 a.m. start time. Option C is the Flip alternative recommended bell schedule (above), with Option D being the same schedule moved to a 7:30 a.m. start time (20 minutes earlier). Option E has MS in the first tier, then HS, then ES. These schedules are shown in detail at Appendix K.



## **Selecting a New Bell Schedule**

- **Evaluating the Impact of Bell Schedule Options**

In Phase II of the TTF effort, TTF members were again divided into three equal-sized committees. One committee evaluated the potential impacts of the various bell schedule options on students; one committee evaluated the potential impacts on FCPS teachers, administrators, staff and other employees; and the third evaluated the potential impacts on the greater community. Membership lists for the three Impact committees are at Appendix M.

The Impact Committees worked hard for more than three months and, despite a one-month extension to their deadline, some members still felt rushed. The committees gathered a significant amount of information, both fact-based and opinion. As expected, given the intentionally diverse make up of the committees, there were disagreements during this process about the information and findings. The committees provided this information to the TTF in reports – essentially fact sheets on given impacts. The three Impact committee reports – Community, Employees and Students - are at Appendices N, O and P, respectively.

- **TTF Voting on Bell Schedule Options**

After the Impact Committees reported their findings and conclusions to the TTF, the TTF met on February 5, 2008, to vote whether to recommend an alternative bell schedule to the School Board, and if so, which of the five alternatives should be recommended. Before those votes, TTF members were given the opportunity to re-visit their earlier preference for a three-tier school day that begins with ES, has HS second and MS last. They agreed overwhelmingly that they still wanted the school day structured in that order. Roll call votes were held on the two final questions. In the first vote, members were asked to state their preferred bell schedule option incorporating later HS start times. Of the 40 voting members present, 23 voted to recommend bell schedule Option C to the FCPS School Board for further consideration, 4 voted to recommend Option D (the version of Option C that starts 20 minutes earlier), and 13 members abstained from voting. In a second roll call vote to choose between the later-start Option C and making no change at all, 22 members voted for Option C and a later start time, 5 voted for making no change to today's bell schedule, and, again, 13 members abstained from voting.

One issue discussed by the TTF was that with HS in the second tier, then who starts as the bulk of the first tier (MS or ES) and who starts as the bulk of the third tier (ES or MS)? As noted above, this was resolved with ES first, HS second and MS last. Civil twilight concerns limit how early the bell schedule could start if ES is the bulk of the first tier and could impact the number of buses (and thus operating costs) needed to deliver students to first tier starting schools. Some TTF members were concerned about the impact on families' abilities to provide after-school child care if ES students were on the first tier, with dismissal from school around 2:30 p.m. Conversely, starting the bulk of ES schools in the third tier, as they are now, has required before-school child care that may not be needed for ES students in the first tier. The current tier 3 start times for many ES have made morning child care necessary, since parents often have to go to work early. Many on the TTF came to see that these before and after school child care concerns effectively balance out.

TTF members were also very concerned about the appropriate start times for MS students. Members were generally very concerned about supervision of MS students in the afternoons after school is out, since MS students can be particularly susceptible to inappropriate behaviors and bad influences. Having the bulk of MS in the first tier, as today, aggravates this concern. Putting the bulk of MS in the first tier is also problematic, since MS bus rides can be very long (as long as, or longer than, HS rides). Beginning in 2005-06, the FCPS and Fairfax County expanded after-school programming in all MS to five days a week, in part to reduce the risk factors and increase the protective factors for this vulnerable age group. In the first quarter of this school year, nearly half of the middle school youth had participated in an after-school activity, with weekly attendance of 15,000 students (October 2007). Putting MS students in the third tier, as the TTF recommends, also provides instruction and supervision later into the day than is the case today; and provides these benefits to all students, not just those who participate in an after-school activity today, because all students would be in school until the late afternoon. More detail about the MS after-school programs is at Appendix T.

- **Summary of the TTF Recommended Bell Schedule Change**

To summarize briefly the final voting, members arrived at Option C (ES/HS/MS) as a middle ground that allows high schools to start later but with an end time that best avoids impacts on high school and community sports. Many TTF members believe HS after-school practices and activities could start right after dismissal, rather than waiting for 30 to 40 minutes before beginning. Reducing this delay would help offset the impact on community groups who wait for HS sports teams, bands, etc., to vacate gyms, fields and pools before they can begin their activities. Once again, the bell schedule recommended by the TTF is:

Tier	School	Start Times	End Times
1	Elementary	7:50 – 8:10	2:30 – 2:50
2	High	8:35 – 8:55	3:25 – 3:45
3	Middle	9:20 – 9:40	4:10 – 4:30

### ***Concerns Regarding the Bell Schedule Change***

- The proposed bell schedule and recommended service parameters should be implemented together, and not viewed as separate recommendations or actions.
- The greater Fairfax community should be given ample notice before bell schedules are changed, so that families have time to arrange child care, adjust work hours if necessary, etc. The FCPS should reach out aggressively to the community to inform them of the service parameter and bell schedule changes. This step was found to be critically important in other communities that moved start times.
- The TTF recommends the School Board plan and provide the resources needed to implement strategies to mitigate the possible negative impacts and disruptions to the community and FCPS employees from these changes, including contracting with consultants who specialize in change management.
- To preclude a repeat of the current conditions, we believe the Transportation Department's performance standards must, at a minimum, reflect the service parameters recommended by the TTF.

## Other Experiences with Later Start Times

### *Experiences, Information and Ideas From Other Jurisdictions with regard to Later High School Start Times*

- Jurisdictions that have shifted to a later high school start time have generally put high school on the middle of three tiers, usually at 8:30 or 8:40 a.m., as the TTF has done.
- Middle school has most often gone later (8:50-9:40 a.m.), as in the TTF proposal, though it has gone early in some cases (7:45-7:50 a.m.).
- Elementary school is sometimes placed in the first tier (7:30-8:00 a.m.), sometimes spread over a range of tiers (Arlington/Minneapolis) as the TTF proposes and, less often, placed entirely in the last tier (9:20 a.m. in Edina, MN).

Below is a sampling of jurisdictions that not only managed a shift in bell times, but did so without adding to transportation costs (i.e., no additional buses were needed). Both old and new start times are listed (new high school start times are in **boldface**). A much more detailed review of these experiences is at Appendix U.

#### Minneapolis, MN

Old: HS, 7:15 a.m.

New: **HS, 8:40 a.m.**; ES, 7:30-9:10 a.m. (spread over several tiers); MS, 9:30-40 p.m.

#### Edina, MN

Old: HS, 7:20 a.m.

New: **HS, 8:30 a.m.**; MS, 7:45 a.m.; ES, 9:20 a.m.

#### Arlington, VA

Old: HS, 7:30 a.m.; MS 8:10 a.m.; ES, 8:50 a.m.

New: **HS, 8:19 a.m.**; MS, 7:50 a.m., ES, 8:00/8:25/9:00 a.m.

#### Brevard County, FL \*

(\*NOTE: the Brevard County School District has approximately 75,000 students who travel on a 3-tiered bus system – each bus having 3 routes to serve the three school levels. This system size and set-up is comparable to the FCPS, who has about the same number of riders and three tiers. Brevard’s transportation costs were unchanged before and after the change in bell times, and they achieved a 15-minute decrease in delivery time.)

Old: HS, 7:30 a.m.; MS, 8:50 a.m.; ES, 9:50 a.m.

New: **HS, 8:30 a.m.**, ES, 8:00 a.m.; MS, 9:15 a.m.

## Jessamine County, KY

Old: HS, 7:30 a.m.; MS, 7:40 a.m.; ES, 8:30 a.m.

New: **HS, 8:40** a.m.; ES, 8:00 a.m.; MS, 8:50 a.m.

Follow-up studies and reports have shown that the jurisdictions that made the change to later high school start times found or experienced:

- High school students get more sleep
- High school students wake up later (their most important sleep is from 4:00-7:00 a.m.)
- Drop out rates decrease
- Teen depression decreases
- Academic performance improves
- Teen traffic accidents decline
- Participation in sports and extracurricular activities increases, or remains the same
- Students are more alert and participate more in class, especially during first period
- Tardiness decreases
- Fewer days home sick
- Family and peer relationships improve
- School disciplinary actions and referrals to counselors decline
- Less daytime sleepiness, falling asleep during class or while doing homework.
- Child care was not as big an issue as feared.

Some other experiences and suggestions from other jurisdictions are listed below, by subject. A longer and more complete iteration of this information is at Appendix U:

### **CHILD CARE:**

**Arlington, VA:** An unexpected outcome was the lack of added demand placed on Extended Day programs.

**Jessamine, KY:** The local YMCA offers before-school care for middle school students who now have the latest start times.

**Brevard County, FL:** For elementary school students, the need for after-school care increased, but the need for before-school care was eliminated. They now hold middle school activities before school rather than after.

### **TRANSITION:**

**Jessamine, KY:** Advises to take time and involve stakeholders. Educate community on teen sleep needs. Do surveys using nationally recognized survey tools of teen sleep habits and of staff and parent views.

## **TEACHER IMPACT:**

**Arlington, VA:** Rush hour commuting, childcare, coaching, and other factors were raised as barriers to changing the school start times. In an effort to retain teachers, the school system provided some options to help ease the transition. Success of these initiatives is demonstrated by the fact that no teacher left the Arlington Public Schools because of issues relating to changing the start times.

## **SOURCES/LINKS:**

**Minnesota: “Changing Times: Findings from the First Longitudinal Study of Later High School Start Times,”** Kyla Wahlstrom, associate director of the Center for Applied Research and Educational Improvement (CAREI) at the University of Minnesota, NASSP Bulletin, Vol. 86, No. 633, December 2002.

<http://cehd.umn.edu/CAREI/Reports/docs/SST-2002Bulletin.pdf>

<http://cehd.umn.edu/CAREI/Reports/summary.html#SchoolStart>

<http://cehd.umn.edu/CAREI/Reports/docs/SST-1998VI.pdf>

<http://cehd.umn.edu/CAREI/Reports/docs/SST-1998VII.rtf>

### **Edina, MN:**

<http://www.edina.k12.mn.us/news/reports/laterstart/summary.htm>

**Arlington (VA) Public Schools: “Impact of 2001 Adjustments to High School and Middle School Start Times”** (June 2005)

<http://www2.apsva.us/1540108292149610/lib/1540108292149610/report0605.pdf>

**Advisory Council on Instruction High School Start Time Study Committee Report** (Dec 1999; impetus for Arlington start time effort):

[http://www2.apsva.us/1540108292149610/lib/1540108292149610/hs\\_start\\_time\\_report.pdf](http://www2.apsva.us/1540108292149610/lib/1540108292149610/hs_start_time_report.pdf)

**Wilton, CN:** League of Women Voters of Connecticut Study; **“LWV-CT School Start Time Concurrence Steering Committee Report”** (September 2005):

<http://serv01.siteground126.com/~wiltonlw/images/stories/MiscPDFs/lwvctconcurrence.pdf>

SCHOOL BOARD TRANSPORTATION TASK FORCE

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