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Introduction

The addition of a new high school and conversions of current school buildings will dramatically alleviate space deficiency problems in the McCracken County Public Schools (MCPS). At the same time, however, the high school consolidation creates new issues; most notably, the school board, with direction from the superintendent and her staff, must decide if all current school buildings should remain operational after the new high school opens. Decisions required to deal with this problem may be addressed by three forces: evidence (e.g., data detailing needs and resources), philosophy (e.g., district and stakeholder values and beliefs), and politics (e.g., individual and group interests and preferences). In serving the community, board members and administrators ideally seek to make objective decisions that are in the best interests of all stakeholders. To this, they should have data that allows them to make informed choices in the context of community sentiments and preferences.

The purposes of this study are to provide an objective analysis of prevailing and future facility needs in the MCPS and to make recommendations to the superintendent and school board regarding these needs. The document focuses on evidence and forecasts of future conditions.

Demographic Analysis

Overall Population Data

From 2000 to 2010, the population in the United States increased by 9.7%. The percentage increase for the decade was the lowest since 1950 and considerably lower than the 13.2% increase recorded for the period of 1990 to 2000.

The U.S. Census Bureau divides the country into four regions; Kentucky is in the South region. From 2000 to 2010, the aggregate population for this region increased by 14.3%. Kentucky's population increase during that period, however, was only 7.4%. Thus, Kentucky population increase was 6.9% below the increase for the South region and 2.3% below the increase for the nation. Data comparing Kentucky to national and regional data are in Table 1.

Table 1 Total Population of the Nation, South Region, and Kentucky: 2000 to 2010

<i>Area</i>	<i>2000 population</i>	<i>2010 population</i>	<i>Actual change</i>	<i>% change</i>
United States	281,421,906	308,745,538	+27,323,632	+9.7
South Region	100,236,820	114,555,744	+14,318,924	+14.3
Kentucky	4,041,769	4,339,367	+297,598	+7.4

Source: U.S. Census Bureau

McCracken County Data

In both 2000 and 2010, McCracken County was the 12th largest county in the Commonwealth based on population. Paducah was the 11th largest city in 2000 but fell to the 15th largest city in 2010. Over the past decade, the total population in McCracken County increased by only 51, or an increase of only one-tenth of 1%. However, data for Paducah City and the rest of McCracken County reveal that total population growth in the McCracken County Public Schools (MCPS) was greater than the population increase for the entire county. From 2000 to 2010, the population in Paducah City decreased by 4.9%.

Data for the city and county are displayed in Table 2 and illustrated in Figure 1. These figures show how the total population in Paducah City and the total population remainder of the country moved in opposite directions. The population for the remainder of McCracken County is essentially the total population residing within the MCPS.

Table 2 Population Changes for McCracken County and Paducah City: 2000 to 2010

<i>Area</i>	<i>2000 population</i>	<i>2010 population</i>	<i>Actual change</i>	<i>% change</i>
McCracken County	65,514	65,565	+51	+0.1
Paducah City	26,307	25,024	-1,283	-4.9%
McCracken County minus Paducah City	39,207	40,541	+1,334	+3.4%

Source: U.S. Census Bureau

Live Birth Data

The latest year for which live birth data were available was 2009. This statistic is helpful to projecting future kindergarten enrollments. Figure 2 shows the number of live births recorded for McCracken County from 2002 to 2009. The source for the data was the Annie E. Casey Foundation’s database.

Because there are two school districts in the county, the percentage of live births subsequently enrolling in the MCPS had to be extrapolated. Table 3 includes data showing the percentage of live births in relation to MCPS kindergarten enrollments 5 years later. An average for the annual percentages was then calculated. For the 6-year period analyzed, the range in percentages for live births to MCPS kindergarten enrollment is 68.10% to 74.63%; the average (mean) is 71.07%; and the standard deviation is 0.02. Thus, it is anticipated that 71% of the county’s birth pool will subsequently enroll in the MCPS and that variations in that percentage for the next 6 years, if they occur, will not be substantial.

Table 3 Percentage of the County Birth Pool Enrolling in the MCPS 5 Years Later

<i>Calendar year</i>	<i>McCracken County live births</i>	<i>School year</i>	<i>MCPS kindergarten enrollment</i>	<i>% of live births</i>
2002	821	2006-07	579	70.52%
2003	759	2007-08	548	72.20%
2004	837	2008-09	570	68.10%
2005	804	2009-10	600	74.63%
2006	825	2010-11	586	71.03%
2007	802	2011-12	561	69.95%
6-year average				71.07%

Enrollment Forecasts

In order to determine if a school district has adequate facility space, future enrollments must be forecasted. The most common technique for this purpose is the cohort survival method. The

model is based on the assumption that the immediate future will be much like the immediate past. Forecasts in this study cover a 12-year period—6 years of history and 6 years of forecasts. Forecasts are limited by unforeseen social, political, and economic changes. For example, the creation or closing of a major industry could affect future enrollments.

Throughout the remainder of this study, the district's schools are identified by acronyms commonly applied by district personnel. They are as follows:

CES – Concord Elementary School

FES – Farley Elementary School

HES – Heath Elementary School

HLOES – Hendron Lone Oak Elementary School

LOES – Lone Oak Elementary School

RES – Reidland Elementary School

HMS – Heath Middle School

LOMS – Lone Oak Middle School

RMS – Reidland Middle School

HHS – Heath High School

LOHS – Lone Oak High School

RHS – Reidland High School

A *survival ratio* is a statistic calculated to determine if a cohort (class of students) decreases or increases as it passes from one grade to the next. By taking an average for each grade transition (e.g., Grade 1 to Grade 2) over a period of time, a ratio is determined and subsequently applied to project future enrollments. A survival ratio below 1.0 indicates a cohort's decline; a ratio above 1.0 indicates a cohort's growth.

The two points at which enrollment increases were greatest in the MCPS were from Grades 8 to 9 and Grades 5 to 6; these data likely reflect transfers into middle and high schools. At the other end of the spectrum, cohorts declined as they moved through the last 3 years of high school. The ratios for all grade levels are shown in Figure 3.

Table 4 contains an enrollment projection for MCPS based solely on cohort survival ratios. Kindergarten enrollment was estimated by calculating the average (mean) change for the period of 2007-08 to 2011-12. The average was 0.995. Table 5 contains data showing composite projections for elementary, middle, and high schools based on the same data reported in Table 4.

Table 4 Cohort Survival Enrollment Forecast by Grade Levels

<i>Term</i>	<i>Grades</i>												<i>Total</i>	
	<i>K</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>		<i>12</i>
<i>Actual enrollments</i>														
2006-07	579	571	533	500	498	520	542	540	583	570	541	510	428	6,915
2007-08	548	565	542	542	491	492	550	552	565	620	525	486	465	6,943
2008-09	570	567	559	533	554	522	510	572	558	603	585	467	438	7,038
2009-10	600	585	536	551	549	541	539	492	555	587	541	522	432	7,030
2010-11	586	606	548	540	554	546	553	539	488	613	544	485	464	7,066
2011-12	561	596	558	546	542	560	567	568	527	527	507	504	412	6,975
<i>Projected enrollments</i>														
2012-13	558	568	565	557	551	545	581	573	568	566	476	457	451	7,014
2013-14	555	565	538	564	562	554	565	587	573	609	511	428	409	7,020
2014-15	552	562	535	537	569	565	575	572	587	615	550	460	384	7,061
2016-17	549	559	533	534	542	572	586	581	571	630	555	495	412	7,118
2017-18	546	556	530	531	539	545	593	592	581	613	568	500	443	7,138
2018-19	543	553	527	529	536	542	565	600	592	623	553	512	447	7,123
Change*	-18	-43	-31	-17	-6	-18	-2	+32	+65	+96	+46	+8	+35	+148

*Difference between 2011-12 actual enrollment and 2018-19 projected enrollment

Table 5 Cohort Survival Enrollment Forecast by Grade Level Groups

<i>School year</i>	<i>Grade level groups</i>				<i>Total</i>
	<i>K-3</i>	<i>4-5</i>	<i>6-8</i>	<i>9-12</i>	
<i>Actual enrollments</i>					
2011-12	2,261	1,102	1,662	1,950	6,975
<i>Projected enrollments</i>					
2012-13	2,248	1,096	1,722	1,949	7,014
2013-14	2,222	1,116	1,725	1,957	7,020
2014-15	2,187	1,134	1,733	2,008	7,061
2016-17	2,175	1,114	1,738	2,091	7,118
2017-18	2,163	1,084	1,766	2,124	7,138
2018-19	2,152	1,078	1,757	2,135	7,123
Change*	-109	-24	+95	+185	+148

*Difference between 2011-12 actual enrollment and 2018-19 projected enrollment

Table 6 includes a cohort survival projection using live birth data to estimate future kindergarten enrollments. Table 7 contains data showing composite projections for elementary, middle, and high schools based on the same data reported in Table 6. Because of declines in live births in McCracken County in 2008 and 2009, the projection using birth data to estimate future kindergarten enrollment is lower than the projection based solely on cohort survival.

Table 6 Cohort Survival and Birth Data Forecast by Grade Levels

<i>Term</i>	<i>Grade</i>												<i>Total</i>	
	<i>K</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>		<i>12</i>
<i>Actual enrollments</i>														
2006-07	579	571	533	500	498	520	542	540	583	570	541	510	428	6,915
2007-08	548	565	542	542	491	492	550	552	565	620	525	486	465	6,943
2008-09	570	567	559	533	554	522	510	572	558	603	585	467	438	7,038
2009-10	600	585	536	551	549	541	539	492	555	587	541	522	432	7,030
2010-11	586	606	548	540	554	546	553	539	488	613	544	485	464	7,066
2011-12	561	596	558	546	542	560	567	568	527	527	507	504	412	6,975
<i>Projected enrollments</i>														
2012-13	557	568	565	557	551	545	581	573	568	566	476	457	451	7,013
2013-14	532	564	538	564	562	554	565	587	573	609	511	428	409	6,996
2014-15	533	539	535	537	569	565	575	572	587	615	550	460	384	7,018
2016-17	535	540	511	533	542	572	586	581	571	630	555	495	412	7,062
2017-18	535	542	511	509	538	545	593	592	581	613	568	500	443	7,071
2018-19	536	542	513	510	514	541	565	600	592	623	553	512	447	7,049
Change*	-25	-54	-45	-36	-28	-19	-2	+32	+65	+96	+46	+8	+35	+74

*Difference between 2011-12 actual enrollment and 2018-19 projected enrollment

Table 7 Cohort Survival and Birth Data Forecast by Grade Level Groups

<i>Term</i>	<i>Grade level groups</i>				<i>Total</i>
	<i>K-3</i>	<i>4-5</i>	<i>6-8</i>	<i>9-12</i>	
<i>Actual enrollments</i>					
2011-12	2,261	1,102	1,662	1,950	6,975
<i>Projected enrollments</i>					
2012-13	2,247	1,096	1,722	1,949	7,013
2013-14	2,198	1,116	1,725	1,957	6,996
2014-15	2,143	1,134	1,733	2,008	7,018
2016-17	2,119	1,114	1,738	2,091	7,062
2017-18	2,098	1,083	1,766	2,124	7,071
2018-19	2,101	1,055	1,757	2,135	7,049
Change*	-160	-47	+95	+185	+74

*Difference between 2011-12 actual enrollment and 2018-19 projected enrollment

Trend lines for the grade level groups are shown in Figure 4. As the lines illustrate, the K-3 and 4-5 groups are projected to decline slightly, the other two groups (6-8 and 9-12) are projected to increase slightly.

Figure 4 Forecasted Trends for Grade Level Groups

The MCPS also has preschool programs. The quantities of students enrolled in those programs in January 2011 are shown in Table 8. Preschool students were not included in the enrollment projections; the assumption is that enrollments in these programs will remain relatively stable.

Table 8 Students Enrolled in Preschool Programs: January, 2012

<i>School</i>	<i>Number enrolled</i>
CES	32

FES	68
HES	33
HLOES	35
LOES	34
RES	17
Total	219

Associated Variables

Four factors potentially relevant to this study were examined in relation to enrollment forecasts.

1. *Preliminary kindergarten enrollments.* These data are collected by principals and reported in early March. At the time of this study, the preliminary kindergarten enrollment for 2012-13 was 454. Given past kindergarten enrollments, this figure is unlikely to be accurate. As an example, the kindergarten enrollment for the current school year (Month 2 Membership Report) is 561; yet, the preliminary enrollment determined in March 2011 was only 394. Thus, the decision was made not to rely on the preliminary enrollment data.
2. *Attrition.* As used in this study, attrition refers to an enrollment loss between the Month 2 and the Month 7 Membership Reports. Attrition data are included in Table 9. During the 5 months between these two reports, the district lost 1.7% of its enrollment. As the data show, approximately two-thirds of the attrition occurred at the high school level; some of the enrollment decline is due to mid-year completions (that is, some students qualify for graduation after the first semester). Attrition data have limited relevance for space analysis, because administrators must provide adequate facilities for students at the beginning of a school term.

Table 9 Attrition Data for School Year 2011-12

<i>Report</i>	<i>School level group</i>			<i>Total</i>
	<i>Elementary school</i>	<i>Middle school</i>	<i>High school</i>	
Month 2	3,363	1,662	1,950	6,975

Month 7	3,332	1,650	1,874	6,856
Difference	-31	-12	-76	-119

3. *Out-of-district students.* Kentucky has a mandatory intra-district and inter-district attendance policy. This regulation allows students in low-performing schools, as designated by the state, to attend a different school within their school district or a school within another school district (Education Commission of the States, 2011). Thus, some students attending the MCPS are not residents of the district and some resident students attend school in other districts. Table 10 provides figures for net gain in district transfers for the past 3 years. As these data reveal, the MCPS has a positive exchange ratio; that is, the district receives more transfer students than it loses. Nevertheless, the decline in the ratio after 2009-10 is notable. In the current school year, the four largest exchanges occurred with Paducah Independent Schools (a net gain of 61 students for the MCPS), Marshall County Schools (a net loss of 52 students), Graves County Schools (a net gain of 37 students), and Ballard County Public Schools (a net loss of 21 students). Determining precisely what the transfer ratio will be after the new high school opens is not possible. However, this statistic should be closely monitored over the next 18 months.

Table 10 Transfer Students In and Out of MCPS

<i>School year</i>	<i>Students out¹</i>	<i>Students in²</i>	<i>Difference</i>
2009-10	378	487	+109
2010-11	422	455	+33
2011-12	439	461	+22

¹Resident students attending schools in other districts

²Non-resident students attending schools in the MCPS

4. *Unites States Enrichment Corporation (USEC)*. At the time of this report, the USEC, a wholly owned subsidiary of USEC Inc., was contemplating handing over certain facilities it leases from the federal government at the Paducah Gaseous Diffusion Plant. The plant has approximately 1,200 employees. Obviously, curtailing operations or shutting down the plant would have consequences for the MCPS. Most notably, the status of nearly 300 students could become questionable if the plant closes. Table 11 includes the number of students in each school known to have a parent(s) employed at the plant. The potential loss in revenue is discussed in the finance section of this report.

Table 11 Students Who Have a Parent(s) Employed by USEC

<i>School</i>	<i>Students</i>
CES	35
FES	2
HES	36
HLOES	15
LOES	27
RES	10
HMS	36
LOMS	30
RMS	6
HHS	51
LOHS	38
RHS	7
Total	293

Summary of Demographic Findings

Analysis of U.S. Census data indicates that the overall population in the MCPS has increased very little since 2000. From 2000 to 2010, McCracken County's population increased only one-tenth of 1%; however, when Paducah City is excluded, the remaining portion of the County (that comprising the MCPS district) increased by 3.4%. Although the population change in the district was larger than growth in the total county, it still was well below the growth rate for southern states (14.3%), the nation (9.7%), and Kentucky (7.4%).

Analysis of live birth data suggests that fewer students will be entering kindergarten in the near future. Figures for 2008 and 2009 were well below the figures for 2004 to 2007.

Enrollment projections indicate a student increase of about 1.5% over the next 6 years. The enrollment in the elementary grades (K-5), though, is forecasted to decline by about 5%. In large measure, the anticipated decline results from smaller birth pools. As an example, in the previous 6 years, kindergarten enrollment ranged from 548 to 600 with an average of 574. The projection (with birth data) for the next 6 years produced a range of 532 to 557 with an average of 538.

Space Analysis

Quantitative space analysis is commonly determined by applying normative standards based on square feet per-pupil. Given the growing complexity of programming in schools, space requirements have gradually increased over the past 50 years. The normative range for square feet per-pupil in elementary schools is considered to be 125 to 140; the normative range for middle schools is considered to be 150 to 200 (Kowalski, 2002). In this study, the most conservative figures were applied; for elementary schools the standard was set at 125 square feet per-pupil and in middle schools it was set at 150 square feet per pupil.

At the time of this study, the MCPS was using 10 portable classrooms (or mobile units); 5 at HLOES, 2 at LOES, 1 each at CES, FES, and HES. The portables each have 1,632 sq.ft. (an aggregate of 16,320 sq.ft.), and they are leased for a total of \$100,000 per year. The intent is to discontinue using portable classrooms when the new high school is opened. Therefore, the

portables neither were included in the projected space analysis nor in the current space analysis (so that comparisons between the current and projected analyses would be more exact).

Analysis in 2011-12

Analysis of schools for the current school year was determined by using figures included in the MCPS’s 2-month membership (enrollment) report and building size data provided by district officials. Data for the elementary schools in Table 12 include preschool enrollments. Although preschool students currently attend a half-day, headcounts were used for space analysis. Two other factors regarding the content of this table should be noted. First, data for HLOES and LOES do not include portable classrooms currently located and used at those campuses. Thus, the square footage deficits are not as great as shown. Second, the square feet figure for RES does not include space in the detached pod (5,100 sq. ft.), because this facility is not used for instruction and likely would require renovation if it were to be used for this purpose in the future. Data for the existing secondary schools are in Table 13.

Table 12 Space Analysis for Elementary Schools in 2011-12

<i>School</i>	<i>Students</i>			<i>Square feet</i>		<i>Norm variation¹</i>
	<i>K-5</i>	<i>Preschool</i>	<i>Total</i>	<i>Gross</i>	<i>Per pupil</i>	
CES	560	32	592	58,165 ²	98	-27
FES	507	68	575	50,022 ²	87	-38
HES	459	33	492	42,600 ²	87	-38
HLOES	654	35	689	46,600 ²	68	-57
LOES	848	34	882	70,960 ²	80	-45
RES	335	17	352	55,700 ³	158	+33
Total	3,363	219	3,582	324,047	90	-35

¹Based on norm of 125 sq ft p/pupil

²Does not include square feet provided by portable classrooms

³Figure does not include 5,100 sq ft in a detached pod that currently is not used for instructional purposes nor is likely to be used for instruction in the future.

Table 13 Space Analysis for Secondary Schools in 2011-12

<i>School</i>	<i>Students</i>	<i>Square feet</i>		<i>Norm variation¹</i>
		<i>Gross</i>	<i>Per pupil</i>	
HMS	452	43,097	95	-55
LOMS	778	80,539	104	-46
RMS	431	50,057	116	-34
HHS	533	109,223	205	+15
LOHS	922	124,000	134	-56
RHS	479	91,600	191	+1

¹Based on a norm of 150 sq ft p/pupil for middle schools and a norm of 190 sq ft p/pupil for high schools

Figure 5 shows norm variations for square feet per-pupil at the beginning of the 2011-12 school year. Only three schools exceeded the recommended square feet per-pupil.

Figure 5 Variance from Square Feet per Pupil Norm in 2011-12

Analysis for 2013-14

Analysis in this section examines projected conditions at the time the new high school will open. Several points of information should be noted about the data that follows:

- Enrollment figures in space analyses were based on enrollment projections reported in the previous section of this report. Specifically, data in Table 6 were used.
- Analysis outcomes are reported in this section in relation to six options. These options are summarized in Table 14.
- None of the options includes portable classrooms since the intent to eliminate all of them before the 2013-14 school year.
- In options that include school closings, extrapolations had to be calculated to estimate specific grade level enrollments in the schools involved.

Table 14 Descriptions of Options

<i>Option</i>	<i>School conversions</i>	<i>Boundary changes</i>	<i>Students moved from one school to another</i>
A	All elementary schools are converted to P-3 primary schools; all middle schools are converted to 4-5 intermediate schools; all high schools are converted to 6-8 middle schools.	None	None
B	All elementary schools are converted to P-3 primary schools; all middle schools are converted to 4-5 intermediate schools; all high schools are converted to 6-8 middle schools.	None	FES preschool students are moved to RES.
C	All elementary schools are converted to P-3 primary schools; all middle schools are converted to 4-5 intermediate schools; all high schools are converted to 6-8 middle schools.	Boundary between FES and HLOES is adjusted resulting in 97 P-3 HLOES students falling into the FES boundary.	FES preschool students are moved to RES.
D	Close FES; convert RES to a P-2 primary school; convert remaining elementary schools to P-3 primary schools; convert RMS to a 3-5 intermediate school; convert remaining middle schools to 4-5 intermediate schools; convert high schools to 6-8 middle schools.	The RES boundary is broadened to include the former FES territory.	None other than those affected by closing FES and the subsequent boundary adjustment.
E	Close CES and FES; convert HES and RES to P-2 primary schools; convert LOES and HLOES to P-3 primary schools; convert HMS and RMS to 3-5 intermediate schools; convert LOMS to 4-5 intermediate school; convert high schools to 6-8 middle schools.	The HES boundary is broadened to include the former CES territory; the RES boundary is broadened to include the former FES territory.	None other than those affected by closing CES and FES and the subsequent boundary adjustments.
F	All elementary schools except FES are converted to P-3 primary schools; FES is converted to a 1-3 primary school; all middle schools converted to 4-5 intermediate schools; all high schools are converted to 6-8 middle schools.	None	FES preschool and kindergarten students are moved to RES.

Option A. This option eliminates all current portable classrooms and converts the existing (a) elementary schools into primary schools (P-3), (b) middle schools into intermediate schools (4-5), and (c) high schools into middle schools (6-8). In this alternative, no schools are closed. The space analysis for Option A is in Table 15. The norm variance for square feet per pupil for Option A is shown in Figure 6.

Table 15 Space Analysis for Option A

<i>School</i>	<i>Grades</i>	<i>Students</i>	<i>Square feet</i>	<i>Norm</i>
---------------	---------------	-----------------	--------------------	-------------

<i>School</i>	<i>Grades</i>	<i>Regular</i> ¹	<i>Preschool</i> ²	<i>Total</i>	<i>Gross</i>	<i>Per-pupil</i>	<i>variance</i> ³
CES	P-3	380	32	412	58,165	141	+16
FES	P-3	325	68	393	50,022	127	+2
HES	P-3	305	33	338	42,600	126	+1
HLOES	P-3	413	35	448	46,600	104	-21
LOES	P-3	596	34	630	70,960 ⁴	113	-12
RES	P-3	179	17	196	55,700 ⁴	284	+159
HMS	4-5	334	0	334	43,097	129	+4
LOMS	4-5	492	0	492	80,539	164	+39
RMS	4-5	290	0	290	50,057	173	+48
HHS	6-8	494	0	494	109,223	221	+71
LOHS	6-8	793	0	793	124,000	156	+6
RHS	6-8	438	0	438	91,600	209	+59
Total		5,039	219	5,258	822,563		

¹Based on projected enrollment for 2013-14

²Based on current preschool enrollments

³Based on a norm of 125 sq ft p/pupil for elementary schools and a norm of 150 sq ft p/pupil for middle schools

⁴Figure does not include 5,100 sq ft in a detached pod that currently is not used for instructional purposes nor is likely to be used for instruction in the future.

Figure 6 Option A: Variance from Square Feet per Pupil Norm

Option B. This option is the same as Option A with one exception. The preschool students from FES are moved to RES. Data concerning this alternative are in Table 16. The norm variance for square feet per pupil for Option B is shown in Figure 7. As the data show, this option reduces excessive space at RES.

Table 16 Space Analysis for Option B

<i>School</i>	<i>Grades 2013-14</i>	<i>Students</i>			<i>Square feet</i>		<i>Norm variance³</i>
		<i>Regular¹</i>	<i>Preschool²</i>	<i>Total</i>	<i>Gross</i>	<i>Per-pupil</i>	
CES	P-3	380	32	412	58,165	141	+16
FES	K-3	325	0	325	50,022	154	+29
HES	P-3	305	33	338	42,600	126	+1
HLOES	P-3	413	35	448	46,600	104	-21
LOES	P-3	596	34	630	70,960	113	-12
RES	P-3	179	85	264	55,700 ⁴	211	+86
HMS	4-5	334	0	334	43,097	129	+4
LOMS	4-5	492	0	492	80,539	164	+39
RMS	4-5	290	0	290	50,057	173	+48
HHS	6-8	494	0	494	109,223	221	+71
LOHS	6-8	793	0	793	124,000	156	+6
RHS	6-8	438	0	438	91,600	209	+59
Total		5,039	219	5,258	822,563		

¹Based on projected enrollment for 2013-14

²Based on current preschool enrollments with FES preschool students sent to RES

³Based on a norm of 125 sq ft p/pupil for elementary schools and a norm of 145 sq ft p/pupil for middle schools

⁴Figure does not include 5,100 sq ft in a detached pod that currently is not used for instructional purposes nor is likely to be used for instruction in the future.

Figure 7 Option B: Variance from Square Feet per Pupil Norm

Option C. This option is the same as Option B except the attendance boundary between HLOES and FES is adjusted by moving it closer to HLOES. Estimates indicate that this alteration would result in 97 students moving from HLOES to FES in grades K-3. Data concerning this alternative are in Table 17. The norm variance for square feet per pupil for Option C is shown in Figure 8.

Table17 Space Analysis for Option C

<i>School</i>	<i>Grades 2013-14</i>	<i>Students</i>			<i>Square feet</i>		<i>Norm variance³</i>
		<i>Regular¹</i>	<i>Preschool²</i>	<i>Total</i>	<i>Gross</i>	<i>Per-pupil</i>	
CES	P-3	380	32	412	58,165	141	+16
FES	K-3	422	0	422	50,022	119	-6
HES	P-3	305	33	338	42,600	126	+1
HLOES	P-3	316	35	351	46,600	133	+8
LOES	P-3	596	34	630	70,960	113	-12
RES	P-3	179	85	264	55,700	211	+86
HMS	4-5	334	0	334	43,097	129	+4
LOMS	4-5	492	0	492	80,539	164	+39
RMS	4-5	290	0	290	50,057	173	+48
HHS	6-8	494	0	494	109,223	221	+71
LOHS	6-8	793	0	793	124,000	156	+6
RHS	6-8	438	0	438	91,600	209	+59
Total		5,039	219	5,258	822,563		

¹Based on projected enrollment for 2013-14

²Based on current preschool enrollments with FES preschool students sent to RES

³Based on a norm of 125 sq ft p/pupil for elementary schools and a norm of 150 sq ft p/pupil for middle schools

⁴Figure does not include square feet from portable classrooms.

⁵Figure does not include 5,100 sq ft in a detached pod that currently is not used for instructional purposes nor is likely to be used for instruction in the future.

Figure 8 Option C: Variance from Square Feet per Pupil Norm

Option D. This option includes closing FES and converting RES into a P-2 school and RMS into a 3-5 school. The remaining elementary schools (CES, HES, HLOES, and LOES) are converted into (P-3 primary schools; the remaining two middle schools (HMS and LOMS) are converted to 4-5 intermediate schools; the three high schools are converted into middle schools (6-8). The space analysis for Option D is in Table 18. This alternative dramatically reduces the space surplus at RES; concurrently, it creates a minor space deficiency at RMS. The norm variance for square feet per pupil for Option D is shown in Figure 9.

Table 18 Space Analysis for Option D

<i>School</i>	<i>Grades 2013-14</i>	<i>Students</i>			<i>Square feet</i>		<i>Norm variance³</i>
		<i>Regular¹</i>	<i>Preschool²</i>	<i>Total</i>	<i>Gross</i>	<i>Per-pupil</i>	
CES	P-3	380	32	412	58,165	141	+16
HES	P-3	305	33	338	42,600	126	+1
HLOES	P-3	413	35	448	46,600	104	-21
LOES	P-3	596	34	630	70,960	113	-12
RES	P-2	378	85	463	55,700 ⁴	120	-5
HMS	4-5	334	0	334	43,097	129	+4
LOMS	4-5	492	0	492	80,539	164	+39
RMS ⁴	3-5	416	0	416	50,057	120	-5
HHS	6-8	494	0	494	109,223	221	+71
LOHS	6-8	793	0	793	124,000	156	+6
RHS	6-8	438	0	438	91,600	209	+59
Total		5,039	219	5,258	772,541		

¹Based on projected enrollment for 2013-14

²Based on current preschool enrollments

³Based on a norm of 125 sq ft p/pupil for elementary schools and a norm of 150 sq ft p/pupil for middle schools

⁴Figure does not include 5,100 sq ft in a detached pod that currently is not used for instructional purposes nor is likely to be used for instruction in the future.

Figure 9 Option D: Variance from Square Feet per Pupil Norm

Option E. This option includes closing CES and FES. Both HES and RES are converted to P-2 schools; both HMS and RMS are converted to Grades 3-5 intermediate schools. The remaining elementary schools (HLOES and LOES) are converted to primary schools (P-3); the remaining middle school (LOMS) is converted to an intermediate schools (4-5); the three high schools are converted into middle schools (6-8). The space analysis for Option E is in Table 19. This alternative produces substantial space deficiencies at HES and HMS and the space deficiencies at HLOES and LOES are not reduced. The norm variance for square feet per pupil for Option E is shown in Figure 10.

Table 19 Space Analysis for Option E

<i>School</i>	<i>Grades 2013-14</i>	<i>Students</i>			<i>Square feet</i>		<i>Norm variance³</i>
		<i>Regular¹</i>	<i>Preschool²</i>	<i>Total</i>	<i>Gross</i>	<i>Per-pupil</i>	
HES	P-2	514	65	600	42,600	74	-51
HLOESS	P-3	413	35	448	46,600	104	-21
LOES	P-3	596	34	630	70,960	113	-12
RES	P-2	378	85	463	55,700 ⁴	131	-5
HMS	3-5	505	0	505	43,097	85	-40
LOMS	4-5	492	0	492	80,539	164	39
RMS	3-5	416	0	416	50,057	120	-5
HHS	6-8	494	0	494	109,223	221	71
LOHS	6-8	793	0	793	124,000	156	6
RHS	6-8	438	0	438	91,600	209	59
Total		5,039	219	5,258	719,476		

¹Based on projected enrollment for 2013-14

²Based on current preschool enrollments

³Based on a norm of 125 sq ft p/pupil for elementary schools and a norm of 150 sq ft p/pupil for middle schools

⁴Figure does not include 5,100 sq ft in a detached pod that currently is not used for instructional purposes nor is likely to be used for instruction in the future.

Figure 10 Option E: Variance from Square Feet per Pupil Norm

Option F. This option is the same as Option B with one exception: both preschool students (68) and kindergarten students (81) are moved from FES to RES. The space analysis for option is in Table 20. The norm variance for square feet per pupil for Option F is shown in Figure 11.

Table 20 Space Analysis for Option F

<i>School</i>	<i>Grades 2013-14</i>	<i>Students</i>			<i>Square feet</i>		<i>Norm variance³</i>
		<i>Regular¹</i>	<i>Preschool²</i>	<i>Total</i>	<i>Gross</i>	<i>Per-pupil</i>	
CES	P-3	380	32	412	58,165	141	+16
FES	1-3	325	0	325	50,022	205	+80
HES	P-3	305	33	338	42,600	126	+1
HLOES	P-3	413	35	448	46,600	104	-21
LOES	P-3	596	34	630	70,960	113	-12
RES	P-3	260	85	345	55,700 ⁴	161	+36
HMS	4-5	334	0	334	43,097	129	+4
LOMS	4-5	492	0	492	80,539	164	+39
RMS	4-5	290	0	290	50,057	173	+48
HHS	6-8	494	0	494	109,223	221	+71
LOHS	6-8	793	0	793	124,000	156	+6
RHS	6-8	438	0	438	91,600	209	+59
Total		5,039	219	5,258	822,563		

¹Based on projected enrollment for 2013-14

²Based on current preschool enrollments with FES preschool students sent to RES

³Based on a norm of 125 sq ft p/pupil for elementary schools and a norm of 145 sq ft p/pupil for middle schools

⁴Figure does not include 5,100 sq ft in a detached pod that currently is not used for instructional purposes nor is likely to be used for instruction in the future.

Figure 11 Option F: Variance from Square Feet per Pupil Norm

Financial Considerations

When the new high school opens in 2013, the MCPS will incur additional operating costs, primarily for utilities, custodial services, and general maintenance. Concurrently, the district will be eliminating 16,320 sq.ft. because portable classrooms will no longer be deployed. Added operating costs will be offset partially by anticipated reductions in personnel costs, primarily those resulting from the combination of three existing high schools into a single high school. If FES also were closed (as specified in Option D), the estimated net savings (projected by MCPS administration) is approximately \$68,000 per fiscal year.

The primary concern in the area of revenue is the impending decision of USEC. Table 21 provides figures regarding a possible loss in tangible property tax revenues. Although the Kentucky funding formula has a provision to offset property tax revenue losses, the extent to which this would actually occur cannot be determined at this time.

Table 21 Property Tax Revenue Data Related to USEC

<i>Factor</i>	<i>Tax year</i>		
	<i>2009</i>	<i>2010</i>	<i>2011</i>
USEC assessed valuation	\$333,474,892.86	\$295,365,746.03	\$199,971,458.33
Total MCPS assessment	\$3,497,292,371.00	\$3,543,867,469.00	\$3,520,088,075.00
% of USEC of MCPS assessment	10%	8%	6%
USEC tax bill	\$1,680,713.46	\$1,488,643.36	\$1,007,856.15
Actual revenue from USEC*	\$1,647,099.19	\$1,458,870.49	\$987,699.03

*2% discount in tax bill due to early payment

Evaluation of Options

Making long-term decisions about schools entails risk because a certain degree of uncertainty always exists. Risk pertains to the possibility that a decision may be less than effective. The intent in this study is to reduce uncertainty and risk; however, the future never is predicted with absolute certainty.

The six options analyzed in this study were evaluated from two critical perspectives: effectiveness and efficiency. Effectiveness pertains to the extent that an option provides results that support the district's mission. Efficiency is a criterion that pertains to a reasonable ratio of inputs to outputs; it focuses on the association of effectiveness and cost. Figures 12 through 17 contain the evaluations of the six options.

Figure 12 Option A Evaluation

Description

Noteable outcomes

Possible concerns

Figure 13 Option B Evaluation

Description

Notable outcomes

Possible concerns

Figure 14 Option C Evaluation

Description

Notable outcomes

Possible concerns

Figure 15 Option D Evaluation

Description

Notable outcomes

Possible concerns

Figure 16 Option E Evaluation

Description

Notable outcomes

Possible concerns

Figure 17 Option F Evaluation

Description

Notable outcomes

Possible concerns

Recommendations

The school board and administration should consider facility decisions from two dimensions defined in the previous section: effectiveness and efficiency. Based on the data analyzed and reported in this study, the following recommendations are made.

Primary Recommendation

At the time of this study, the MCPS faced several uncertain situations, the most notable being the impending USEC decision. If the Paducah Gaseous Diffusion Plant ceases operations, the fiscal impact on the district will likely be substantial and the loss of students significant. This issue should be weighed in relation to other evidence included in this report, most notably, the enrollment projections and space utilization data. Accordingly, Option F is recommended, but with an accompanying enrollment contingency that is described in the following paragraphs.

MCPS is organized into three clusters, currently based on the high schools and in future, based on the middle schools. Potential closings were considered in two clusters—Heath and

Reidland. Enrollments indicate that closing a school in the Lone Oak cluster would be impractical because both P-3 schools in this cluster are projected to have space deficiencies.

The Reidland cluster currently consists of four schools (FES, RES, RMS, and RHS). If a school were closed, the cluster should have a primary school (P-2), an intermediate school (3-5), and a middle school (6-8). During the current school term, the Reidland cluster enrolled 927 P-5 students, 85 of whom were preschoolers. Given the size, condition, and location of the buildings in this cluster, FES is the logical school to close; RES is larger, newer, and closer to RMS and RHS. Closing FES would result in RES and RMS serving students in Grades P-5. Based on a standard of 125 sq ft per pupil, these two facilities would have a combined functional capacity of 886. Therefore, if the P-5 enrollment in the Reidland cluster falls below 850, FES should be closed unless other unforeseen circumstances emerge. As projected in this study (see Table 18 and Figure 9), the P-5 enrollment in this cluster will be 879 in 2013-14.

The Heath cluster currently consists of four schools (CES, HES, HMS, and HHS). If a school were closed, the cluster would have a primary school (P-2), an intermediate school (3-5), and a middle school (6-8). During the current school term, the Heath cluster enrolled 1,084 P-5 students, 65 of whom were preschoolers. If a school in this cluster were closed, CES is the most likely option, primarily because HES is across the street from the HMS and HHS campus—a factor that is relevant to pupil transportation and to maximizing the utilization of all cluster facilities. Closing CES would require HES (P-2) and HMS (3-5) to house the P-5 students in this cluster. Based on a standard of 125 sq ft per pupil, these two facilities would have a combined functional capacity of only 686. The P-5 enrollment in this cluster for 2013-14 is projected to be 1,016—well beyond the functional capacity of these two buildings. Therefore, closing CES is not feasible unless the boundaries for the Heath cluster are redrawn to shift students to other clusters. Given the location of the Heath cluster, and given the already limited space in the Lone Oak cluster elementary schools, reducing enrollment in the Heath cluster would require redrawing the attendance boundaries for the entire district.

Additional Recommendations

From an efficiency perspective, two other actions are recommended because they have the potential of having a positive fiscal impact. The first involves a cost reduction and relates to adjusting administrative positions in the Reidland and Heath clusters. Instead of having separate principals for the primary and intermediate grade level schools in these clusters, a configuration of a principal at the primary school and an assistant principal at the intermediate school should be considered. Two factors make this arrangement possible. One is the proximity of the primary schools to the intermediate schools; the other is the fact that a full-time middle school principal will be on the same campus as the intermediate school. Thus, the assistant principals at the intermediate schools would have access to both their immediate supervisors (the principals at the primary schools) and the middle school principals.

The other additional recommendation focuses on generating revenue and pertains to charging a rental fee for the day care programs. The day care programs operate at all elementary schools, and they receive revenue from the state as well as student fees. These programs have not paid a rental fee to the MCPS; yet, they have cash balances. If a rental fee were charged as a percent of revenue, a 5% rental fee would generate approximately \$43,000 per year and a 10% rental fee would generate approximately \$86,000 per year. Given uncertainties about future district revenues, the superintendent and school board should consider charging a rental fee of between 5% and 10% of the preschool revenues.

References

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