

*Desk Audit of The Arkansas School Funding Matrix and
Developing an Understanding of the Potential
Costs of Broadband Access for All Schools*



Arkansas House and Senate
Committees on Education

Picus Odden & Associates

September 9, 2014
Little Rock, Arkansas



Mission Statement

Picus Odden & Associates is an independent school finance consulting group whose mission is to work collaboratively with states and school districts to improve the way public resources for education are translated into improved student learning.



Presentation Outline

- Introductions
- Analysis of Broadband costs
- Desk audit of matrix funding
- Other issues



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Team Members

- Allan Odden
- Lawrence O. Picus
- Scott Price



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Broadband Analysis



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Need for Broadband

- Myriad of electronic resources allow students to:
 - Experience learning in an interactive environment
 - Video conference with experts
 - Watch great teachers
 - Participate in scientific experiments
 - Collaborate in group projects
 - Discuss latest issues asynchronously or synchronously
 - Evaluate and analyze practical information from diverse sources
 - Take on-line assessments



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The Digital Learning Act Act 1280 of 2013

- Expansion of digital learning courses
- Removal of impediments to digital learning
- Each school is to provide every student with the opportunity to take at least one digital learning course
- Districts prohibited from connecting to ARE-ON or creating their own statewide provider network



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Arkansas Digital Learning Study

- Connect school districts with a robust fiber-optic network
- Adopt high bandwidth standards established by the State Educational Technology Directors Association (SETDA)
- Centralize management for statewide network support services
- Efficiently aggregate statewide demand
- Optimize the use of E-Rate and other Federal programs
- Provide value-added services such as professional development and technology support training over the more robust network.



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Broadband Service Goals

- 100 Mbps per 1,000 students today
 - If available would meet today's education needs
 - Could handle "spikes" in data during intense use
- 1,000 Mbps (1 gigabit) per 1,000 students by 2017-18
 - Forward thinking
 - Assumes new applications that require more Bandwidth
- To meet both goals, need to connect schools to fiber optic cable



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Current Status (ADE)

- Average of 71 Mbps per 1,000 students in 254 districts
- Only 51 districts met the 100 Mbps standard
- Individual district access to fiber optic cable not clear
- Districts are prohibited from connecting to ARE-ON or creating their own statewide provider networks



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FASTER Arkansas Task Force

- Dedicated to ensuring high speed Internet for all Arkansas students
- Recommends that districts be allowed to connect to ARE-ON
- Make ARE_ON available to districts and public charter schools



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Governor's Partnership with EducationSuperHighway (ESH)

- Goal is to replace expensive copper connections with fiber optic cable – savings in operating costs would pay for the replacement
- Recommends surveying district bandwidth
- BLR currently has an RFP seeking vendors to do such a survey
 - Determining costs of installing increased Bandwidth to districts
 - Approximating the costs of new equipment to support the new Bandwidth
 - Estimating the cost of connecting to ARE-ON



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Areas to Consider

- Expertise – who will lead this effort?
- Capital Intensity
 - Function of population density and terrain
 - Need to find fair way to provide infrastructure for all when some have already invested on their own
- Network Management and Maintenance



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Two Types of Costs

- Capital (one time or infrequent)
 - Installation of cable
 - Connections and equipment
- Continuing
 - Purchasing Bandwidth
 - Maintaining computers



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Cost Estimates from Other States

State	Cost Per Megabit Per Month (\$)		
	Low	Average	High
Arkansas (2014)	1.50	162.00	286.00
Virginia (2014)		26.00	
Colorado (2013)	6.00		158.00
Ohio (2000)		480.00	
Ohio (2014)		9.00	
Nebraska (2006)		87.00	
Nebraska (2014)		1.28	
National Average (2014)		22.00	



Conclusion on Bandwidth

- Strong commitment by Arkansas
- Much progress has been made
- Need to know what it will cost to reach 100 Mbps and 1,000 Mbps goals
- Will know more about total costs from the results of the BLR RFP on Internet connection costs



Desk Audit of Funding Matrix



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Desk Audit of Funding Matrix

- Current matrix developed in 2003/2006
- Funding levels adjusted annually by BLR
- Purpose of the desk audit
 - Describe school improvement model
 - Compare matrix components to current Evidence-Based (EB) model



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School Improvement Model

1. Analysis of student data
2. Establish ambitious goals
3. Review evidence on good instruction and effective curriculum
4. Invest in teacher training
5. Extra help for struggling students



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School Improvement Model

6. Restructure the school day to provide more effective ways to deliver instruction
7. Provide strong leadership and support data-based decision making
8. Create professional school cultures
9. Bring external professional knowledge to the school
10. Recruit and retain the best teachers and school leaders



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Desk Audit: Four Components

- Staffing for core programs
- Dollar per student resources
- Carry forward: M&O, central office, transportation
- Categorical programs: Extra help for struggling students



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Staffing for Core Programs



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1. Full Day Kindergarten

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
Full day kindergarten program. Each K student counts as 1.0 pupil in the funding system.	Requires districts to provide a full day kindergarten program for children who turn age 5 before August 1. Fully funded for attending students.	Full day kindergarten program. Each K student counts as 1.0 pupil in the funding system.



2. Core Teachers/Class Size

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation																				
K-3: 15 4-12: 25	K: 20 1-3: 23, with a max. of 25 4-6: 25, with a max. of 28 7-12: 25, with a max. of 30	K-3: 15 4-12: 25 ²																				
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model																				
	Number of Core Teachers ¹	Number of Core Teachers																				
	<table border="1"> <thead> <tr> <th>Grade</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>K</td> <td>2.00</td> </tr> <tr> <td>1-3</td> <td>5.00</td> </tr> <tr> <td>4-12</td> <td>13.80</td> </tr> <tr> <td>Total</td> <td>20.80</td> </tr> </tbody> </table>	Grade	Number	K	2.00	1-3	5.00	4-12	13.80	Total	20.80	<table border="1"> <thead> <tr> <th>Grade</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>K</td> <td>2.67</td> </tr> <tr> <td>1-3</td> <td>7.66</td> </tr> <tr> <td>4-12</td> <td>13.79</td> </tr> <tr> <td>Total</td> <td>24.12</td> </tr> </tbody> </table>	Grade	Number	K	2.67	1-3	7.66	4-12	13.79	Total	24.12
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Total	20.80																					
Grade	Number																					
K	2.67																					
1-3	7.66																					
4-12	13.79																					
Total	24.12																					

¹ Source: Bureau of Legislative Research (2014), p. 5

² For grades K-5 this averages approximately 18 per grade so Arkansas policy can meet or exceed the state's class size recommendation for all grades



3. Elective/Specialist/PAM Teachers

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
20% of grade K-12 core teachers	20% of grade K-12 core teachers	20% of K--8 teachers 33 1/3 % of grade 9-12 teachers
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	No. of Elective Teachers	
	Grade	Number
	K-12	4.14 ^c
	Total	4.14
	No. of Elective Teachers	
	Grade	Number
	K-8	3.60
	9-12	2.04
	Total	5.64

^c Source: Bureau of Legislative Research (2014), p. 5



Core/Non-Core Comparison

500-student Prototype Resources – Current Arkansas Policy		500-student Prototype Resources – Current EB Model	
Number of Teachers		Number of Teachers	
Type	Number	Type	Number
Core	20.80	Core	24.12
Non-Core	4.14	Non-Core	5.64
Total	24.94	Total	29.76



4. Instructional Facilitators/Coaches

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
1 per 200 students or 2.5 per 500 students	2.5 per 500 students, with up to 0.5 used for an AP position	1 per 200 students
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	2.5	2.5



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5. Tutors/Tier 2 Intervention

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation										
No base tutor positions in prototypical school. Tutor positions only enabled on the basis of the NSL Student count.	No base tutor positions in prototypical school. Tutor positions only enabled on the basis of the NSL Student count.	1 tutor position in each prototypical school ³										
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model										
	No Core or base tutors generated under current model	<table border="1"> <thead> <tr> <th colspan="2">Number of Core Tutors</th> </tr> <tr> <th>Grade</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>K-8 (1:450)</td> <td>0.7</td> </tr> <tr> <td>9-12 (1:60-0)</td> <td>0.3</td> </tr> <tr> <td>Total</td> <td>1.0</td> </tr> </tbody> </table>	Number of Core Tutors		Grade	Number	K-8 (1:450)	0.7	9-12 (1:60-0)	0.3	Total	1.0
Number of Core Tutors												
Grade	Number											
K-8 (1:450)	0.7											
9-12 (1:60-0)	0.3											
Total	1.0											

³ Additional tutors are enabled through the NSL pupil count in Element 21.



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6. Special Education

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
2.9 teachers per 500 students	2.9 teachers per 500 students	1 teacher for every 150 students in the school
Federal IDEA Part B (Title VI-B) funds	Federal IDEA Part B (Title VI-B) funds	1 aide for every 150 students in the school
State catastrophic aid program	State catastrophic aid program	Federal funds
		Full state funding for students with severe disabilities
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	2.9 special education teachers	3.3 special education teachers
	Federal funds	3.3 special education aides
	State catastrophic aid	Federal funds
		State catastrophic aid



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7. Substitute Teachers

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
\$100 + social security and state retirement per day for 10 days a year for each teacher	\$64.00 per pupil, which equals \$133 including social security and state retirement per day for 10 days a year for each teacher	5 percent of all teacher and instructional coach positions (which provides about 10 days per teacher per year).
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	\$64.00 per pupil	\$195 per student which represents 5% of 32.26 teachers (1.613) times the FY 13 salary and benefit amount per teacher of \$60,566.



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8. Student Support/Family Outreach

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
1 for each 100 NSL students. 1 for every 500 middle school students 1 for every 250 high school students	2.5 positions for every 500 K-12 students	1 guidance counselor for every 450 grade K-5 students 1 guidance counselor for every 250 grade 6-12 students 1 nurse for every 750 K-12 students
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	Counselors 1.11 Nurses 0.67 Other Pupil Support 0.72 Total 2.50	Counselors K-5 0.5 6-12 1.1 Nurses 0.7 Total 2.3

* Additional student support resources are provided on the basis of student poverty rates in Element 21.



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9. Supervisory and Instructional Aides

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
\$35 per pupil intended to fund 1 supervisory aide for every 500 K-12 students	\$54.70 per pupil, approximately enough to hire one supervisory aid.	1 supervisory/duty aide for every 225 K-8 students 1 supervisory/duty aide for every 200 grade 9-12 students,
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	\$54.70 per pupil, approximately enough to hire one supervisory aid	K-8 1.5 9-12 0.6 Total 2.1



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10. Librarians

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
1 librarian for prototypical 500-student middle school and 1.5 librarian positions for a 500-student high school, and no librarians for the elementary school (supplied via specialist/elective positions)	0.825 librarian position for the 500-student Arkansas school	1 librarian for every 450 K-8 students 1 librarian for every 600 grade 9-12 students
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	0.825 librarian positions	K-8 0.77 9-12 0.26 Total 1.03



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11. Principals and Assistant Principals

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
1 principal for every 500 students	1 principal for every 500 students	1 principal for every 450 K-8 students, 1 principal and 1 assistant principal for every 600 grade 9-12 students
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	1 principal	K-8 0.77 9-12 principal 0.26 9-12 AP 0.26 Total 1.29



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12. School Site Secretarial Staff

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation	
Included in the 2003 Carry Forward. 2006 Recalibration report recommended 2 secretary positions for every 500 students	1 secretary for every 500 students	1 school secretary for every 225 K-8 students and 1 school secretary for every 200 grade 9-12 students	
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model	
	1 secretary	K-8	1.54
		9-12	0.77
		Total	2.31



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Dollars per Student Resources



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13. Gifted and Talented Students

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
Retain extant standards and expenditure requirements. No specific funding in the Matrix	Retain extant standards and expenditure requirements. No specific funding in the Matrix	\$25 per regular student
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	Retain extant standards and expenditure requirements. No specific funding in the Matrix	\$25 per regular student



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14. Professional Development

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
10 days of student free time for training	The teacher work year was expanded by 5 days to provide 10 days for PD	10 days of student free time for training
Funds for training expenses at the rate of \$50 per student	Funded outside the matrix as a categorical program. \$52 per pupil for training in FY 2013	Funds for training at the rate of \$100 per student
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	FY 2013 -- \$26,000 FY 2014 -- \$26,500 FY 2015 -- \$16,200	\$50,000



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15. Technology and Equipment

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
\$250 per pupil	\$250 per pupil in Act 59, now reduced to \$217.60 per pupil for FY 2013	\$250 pupil
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	\$217.60 per pupil or \$108,800	\$250 per pupil or \$125,000



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16. Instructional Materials and Formative/Short Cycle Assessments

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
2003 Report \$250 per pupil 2006 Report Inst. Materials \$160 per pupil Assessment \$25 per pupil Total of \$185 per pupil	\$176.70 per pupil which is \$160 per pupil increased by inflation since the 2006 study	\$190 per pupil for instructional materials and \$30 per pupil for assessment for a total of \$220 per student The EB model also includes \$10 per student for supplemental instructional and other materials for NSL tutoring, extended day, summer school, and ELL programs described below (Elements 21, 22, 23 and 24).
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	\$88,350	\$220 per pupil for a total of \$110,000



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17. Extra Duty Funds/Student Activities

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
\$0 per pupil grades K-5 \$60 per pupil Grades 6-8 \$120 per pupil grades 9-12	\$55.20 per student	\$200 per student for each K-8 student \$250 per student for each 9-12 student.
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	\$27,600	K-8 \$69,280 9-12 \$38,300 Total \$107,580



Carry Forward



18. Operations and Maintenance

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
\$1,152 per student included in the carry forward estimate	Approximately 9% of foundation funding based on a series of studies and comparisons with National study	Separate formulas for custodians, maintenance workers and groundskeepers
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	Per pupil amount tied to percent of foundation funding. Includes property insurance funds 2013 \$629.00	2.8 custodians, 1.0 maintenance workers 0.82 groundskeepers 4.62 total plus funds for materials and supplies of \$116.73



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19. Central Office Staffing

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
Included with Maintenance and Operations and transportation in an overall "carry forward" per pupil amount of \$1,152	Included at a level of \$415.10 with Maintenance and Operations and transportation in an overall "carry forward" per pupil amount now adjusted to \$1,354	A per pupil amount calculated from a 3,900-student prototypical school district.
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	Districts currently spend an estimated average of \$234.35 per pupil	Has ranged from \$488 to \$644 per pupil in recent studies in other states



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20. Transportation

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
Included in an overall "carry forward" per pupil amount of \$1,152	Included at a level of \$309.90 in an overall "carry forward" per pupil amount now adjusted to \$1,354	The EB does not address transportation, but recommends providing aid on a categorical basis based on multiple factors
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	\$309 per pupil	Not addressed, but recommends providing aid on a categorical basis based on multiple factors



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Staffing for Struggling Students



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21. Tutors and Pupil Support

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
1 tutor position and one pupil support position for every 100 NSL students	<p>1 position (\$517 per NSL student) for districts with an NSL percentage up to 70%</p> <p>2 positions (\$1,033 per NSL student) for districts with NSL percentage between 70 and 90%</p> <p>3 positions (\$1,549 per NSL student) for districts with NSL percentage above 90%</p>	1 tutor position and one pupil support position for every 125 at risk (unduplicated NSL + ELL) students. These positions are provided additional days for professional development (Element 14) and substitute days (Element 7) discussed above.
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	Funding for extra help strategies is based on the percentage of NSL students in a district	Assuming an average of 50% of a 500-student K-12 school are unduplicated NSL plus ELL students, the school would generate 2.0 additional tutor positions and 2.0 additional pupil support positions



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22. Extended-Day Programs

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
<p>Nothing recommended in 2003 adequacy study.</p> <p>2006 Recalibration study recommended (1) teacher position for every 30 NSL students (or 3.33 FTE per 100 such students).</p> <p>Position paid at the rate of 25 percent of annual salary—enough to pay a teacher for a 2-hour extended-day program, 5 days per week.</p> <p>This formula equates to 1 teacher position for every 120 NSL students.</p>	No specific formula but the funds from the NSL categorical grant could be used for extended day programming.	<p>One (1) teacher position for every 30 at-risk students (unduplicated NSL plus ELL), or 3.33 FTE per 100 at-risk students.</p> <p>Position paid at the rate of 25 percent of annual salary—enough to pay a teacher for a 2-hour extended-day program, 5 days per week.</p> <p>This formula equates to 1 teacher position for every 120 at-risk (unduplicated NSL plus ELL) students</p>
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	No specific formula but the funds from the NSL grant could be used for extended day programming.	Assuming an average of 50% of a 500-student K-12 school are unduplicated NSL plus ELL students, the school would generate 2.1 additional staff positions



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23. Summer School

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
<p>Nothing recommended in 2003 adequacy study.</p> <p>2006 Recalibration study recommended (1) teacher position for every 30 NSL students (or 3.33 FTE per 100 such students).</p> <p>Position paid at the rate of 25 percent of annual salary—enough to pay a teacher for a six to eight week 4 hour per day summer school program and include adequate time for planning and grading</p> <p>This formula equates to 1 teacher position for every 120 NSL students.</p>	<p>No specific formula but the funds from the NSL grant could be used for extended day programming.</p>	<p>One (1) teacher position for every 30 at-risk students (unduplicated NSL plus ELL), or 3.33 FTE per 100 at-risk students.</p> <p>Position paid at the rate of 25 percent of annual salary—enough to pay a teacher for a 2-hour extended-day program, 5 days per week.</p> <p>This formula equates to 1 teacher position for every 120 at-risk (unduplicated NSL plus ELL) students</p>
	<p>500-student Prototype Resources – Current Arkansas Policy</p>	<p>500-student Prototype Resources – Current EB Model</p>
	<p>No specific formula but the funds from the NSL grant could be used for extended day programming.</p>	<p>Assuming an average of 50% of a 500-student K-12 school are unduplicated NSL plus ELL students, the school would generate 2.1 additional staff positions</p>



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24. English Language Learners

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
<p>0.4 FTE per 100 ELL students</p>	<p>\$305 per ELL, or about 0.6 FTE per 100 ELL</p>	<p>One (1) FTE teacher position for every 100 identified ELL students.</p>
	<p>500-student Prototype Resources – Current Arkansas Policy</p>	<p>500-student Prototype Resources – Current EB Model</p>
	<p>\$305 per ELL, or about 0.6 FTE per 100 ELL</p>	<p>One (1) FTE teacher position for every 100 identified ELL students.</p>



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25. Alternative Schools

Original EB Recommendation	Current Arkansas Policy	Current EB Recommendation
1 teacher for every 20 ALE students	\$4,228 per ALE student, which equals 1 teacher for every 14 students	1 assistant principal position plus 1 teacher position for every 7 FTE students in an alternative school program, as well as the dollar per student resources (instructional materials, technology, etc.) and Central Office and Maintenance and Operations.
	500-student Prototype Resources – Current Arkansas Policy	500-student Prototype Resources – Current EB Model
	\$4,228 per ALE student, which equals 1 teacher for every 14 students	1 AP-level position funded plus 3 teachers for an ALE school with 21 students, plus the dollar per student resources (instructional materials, technology, etc.) and Central Office and Maintenance and Operations.



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Questions and Discussion



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Contact Information

Picus Odden & Associates
Lawrence O. Picus
Allan Odden
4949 Auckland Ave.
North Hollywood, CA 91601
818 693-1703 (mobile)
lpicus@picusodden.com
arodden@picusodden.com
www.picusodden.com

