

**Adequacy for Excellence in Kentucky:**

**Report 2 (of 2)**

**Presented to the**

**Council for Better Education**

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# Contents

[Contents 2](#_Toc393883074)

[Executive Summary 3](#_Toc393883075)

[Evidence-Based Adequacy Model 5](#_Toc393883076)

[Evidence-Based Methodology 12](#_Toc393883077)

[Compensation Levels 12](#_Toc393883078)

[Regional Cost Adjustments 14](#_Toc393883079)

[Key Findings 15](#_Toc393883080)

[Conclusion 17](#_Toc393883081)

[Appendix A: ky Comparable wage index (2005-06) 19](#_Toc393883082)

[Appendix B: District Comparisons between EB Model and 2012-13 SEEK Revenues 20](#_Toc393883083)

[Appendix C: Technical Aspects and Functionality of EB Excel-based model 26](#_Toc393883084)

[Technological specifications 26](#_Toc393883085)

[Functionality to Alter Model Parameters 26](#_Toc393883086)

[Functionality to View Data 27](#_Toc393883087)

[References 28](#_Toc393883088)

# Executive Summary

**Adequacy for Excellence in Kentucky**

Picus Odden & Associates

August 2014

This document describes Picus Odden & Associate’s findings from a contemporary, independent review of Kentucky’s school finance system. It draws on our work with many states to develop student outcome-focused, adequacy-based funding systems. We are confident our approach to reviewing and evaluating school funding systems will meet Kentucky policymakers’ expectations for assessing the state’s need to find resource allocation strategies that will lead to improved student outcomes. The evidence used to support the allocations in this report can be found in Adequacy for Excellence: Report 1. Recommendations combine scholarly evidence and teacher and school business officials’ experiences from across the state (the latter referred to as “Stakeholder Panels”), as well as an Advisory Committee, which made final decisions about how the components of the Evidence-Based Model (EB) will apply to Kentucky.

The EB approach to school finance adequacy takes into consideration the primary aspects of the learning process—those that lead directly to student academic growth. In the case of Kentucky, there exists a difference between what the EB approach suggests is a way to reach high academic standards, such as those in indicated by the Common Core Academic Standards, and the funds expended by KY school districts in 2012-13.

In 2012-13 KY education revenues reached $7.83 billion, including $5.91 billion at the district level, as well as $1.10 billion in On-Behalf benefit payments, $20.95 million for Kentucky Department of Education, and $16.13 million for Kentucky schools for the Blind and Deaf at the state level.

During the 2012-13 school year, the EB model suggests that all districts could reach adequacy with roughly $9.40 billion in the education system, or approximately $2.44 billion (25.98 percent) over the expenditures in the system. This $9.40 billion equates to $13,130 per pupil (ADM).

The difference between current school district revenues and our projection of adequate funding varies across the state’s 174 school districts ranging from $9,285 per-pupil below the adequacy model to $3,721 per-pupil above the adequacy model estimate. Only one district (Anchorage Independent) spent above the adequacy level. This study does not determine from what source (i.e. local, state, or federal), resources are necessary to bring all districts to an adequate level.[[1]](#footnote-1) All data exclude resources received from federal programs. Therefore, when policymakers determine adequacy, they must also consider that additional federal resources may be available (and were received in 2012-13) and are outside of the adequacy model purview.

This report may be used in conjunction with Adequacy for Excellence Report 1 and the Excel-based model, KY EB Model.xls, to determine resources to bring Kentucky’s system of school funding to adequate levels.[[2]](#footnote-2)

# an Evidence-Based Adequacy Model

The Evidence-Based (EB) approach to estimating school finance adequacy identifies a cohesive set of school-level resources, or elements, required to deliver a comprehensive and high-quality instructional program powerful enough to educate students to proficiency in state standards. Each recommendation is supported by research evidence on programmatic effectiveness. To determine the costs of the EB approach in Kentucky, each formula and ratio has been applied to the appropriate school level pupil counts in each district. To determine an estimated cost, a price is then placed on each element (e.g., an appropriate salary and benefits level for personnel). School resources are aggregated to the district level, at which point central office staff and maintenance and operations resources are added, along with other expenditures that are not modeled in the Evidence-Based Approach (e.g., transportation and debt service). The final step involves aggregating the cost of all school- and district-level elements, and adding state level expenditures, to arrive at a total statewide cost and comparing that cost with the 2012-13 SEEK revenues.

The tables that follow provide examples of how school level resources would be provided to prototypical schools, and include models used for small districts (i.e., districts with 390 or fewer students). These tables match resource components in Report 1, with more fiscal data exhibited.

* **Table 1.1** **Kentucky Prototypical Elementary, Middle and High School Models** provides a summary of various school-level components of the EB approach, identified within three prototypical schools—elementary, middle, and high.
* **Table 1.2 EB School Staffing and Resource Models for K-12 English Learners, Low Income students, Special Education and Career and Technical Education (CTE) Programs** provides a summary of the resources available for students who need additional resources to achieve proficiency.
* **Table 1.3 EB Model Resources for PK Programs** provides a summary of the resources for a prototypical pre-kindergarten program.
* **Table 1.4 EB Model for Small Districts** provides staffing levels for districts that are smaller than a typical linear path allows for providing sufficient staff and resources to provide an adequate education.
* **Table 1.5 Kentucky Prototypical Central Office** provides staffing levels for a Central Office serving 3900 students.

**Table 1.1**

**Kentucky Prototypical Elementary, Middle and High School Models**

|  |  |  |  |
| --- | --- | --- | --- |
| **School Element** | Elementary Schools | **Middle Schools** | **High Schools** |
| School Configuration | K-5 | 6-8 | 9-12 |
| Prototypical school size | 450 | 450 | 600 |
| Class size | K-3: 15; 4-5: 25 | 6-8: 25 | 9-12: 25 |
| Full-day kindergarten | Yes | NA | NA |
| Length of Teacher Contract | 192 days:  Instruction: 174, Holiday: 4  Open/Close Schools & Parent Conferences: 4  Professional Dev.: 10  (total includes 6 additional PD days) | | |
| **Personnel Resources** |  |  |  |
| Core Content Teachers | 26 | 18 | 24 |
| Specialist Teachers | 20% more  5.2 | 20% more  3.6 | 33.33% more assuming a 90 minute block schedule; teachers teach 3 blocks daily:  8.0 |
| Instructional Coaches | 1 per 200 students:  2.25 | 1 per 200 students:  2.25 | 1 per 200 students:  3.0 |
| Total Core Content  Specialist and  Coaches | 33.45 | 23.85 | 35.0 |
|  |  |  |  |
| Tutors (non-FRPL) | 1.0 | 1.0 | 1.0 |
| Substitute Teachers | 5% extra core content, specialist, SPED, Tutors & instructional coaches:  1.72 | 5% extra core content, specialist, SPED, Tutors & instructional coaches:  1.24 | 5% extra core content, specialist, SPED, Tutors & instructional coaches:  1.80 |
| Counselors | 1.0 | 1.0 /250 students  1.8 | 1.0 /250 students  2.4 |
| Nurses | 1/750 students  0.6 | 1/750 students  0.6 | 1/750 students  0.8 |
| Instructional Aides | 0 | 0 | 0 |
| Supervisory Aides | 2.0 | 2.0 | 3.0 |

**Table 1.1 (continued)**

**Kentucky Prototypical Elementary, Middle and High School Models**

|  |  |  |  |
| --- | --- | --- | --- |
| **School Element** | Elementary Schools | **Middle Schools** | **High Schools** |
| Librarian | 1.0 | 1.0 | 1.0 |
| Principal | 1.0 | 1.0 | 1.0 |
| Asst. Principal/ Program Coordinator | 0.0 | 0.0 | 1.0 |
| School Site Secretary | 2.0 | 2.0 | 3.0 |
| **Dollar per Pupil Resources** |  |  |  |
| Additional Professional development | ;  $100/student, in addition to extra PD days and Inst. Coach resources, above | | |
| Technology  Equipment | $250/student | $250/student | $250/student |
| Instructional Materials including Library Resources | $140/student | $140/student | $175/student |
| Short Cycle Formative Assessments | $25/student | $25/student | $25/student |
| Student Activities | $250/student | $250/student | $250/student |
| Gifted/talented students | $25/student (based on total school students) | $25/student (based on total school students) | $25/student (based on total school students) |

**Table 1.2**

**EB School Staffing and Resource Models for K-12 English Learners, Low Income Students, Special Education, and Career and Technical Education (CTE) Programs**

|  |  |
| --- | --- |
| **School Element** | Resources |
| **English Learners** |  |
| EL Teachers | 1 teacher for every 100 EL students |
| Substitutes | 5 percent of teacher positions |
| Professional Development | As with all teachers, 6 additional PD days for each certified EL position |
| Instructional Materials | $10 per EL student beyond what each generates through the core model |
| **Low Income** |  |
| Tutors | 1 teacher for every 125 FRPL students |
| Extended Day | 3.33 teachers for every 125 FRPL students, times 0.25 |
| Summer School | 3.33 teachers for every 125 FRPL students, times 0.25 |
| Additional Pupil Support | 1 teacher support position for every 100 FRPL students |
| Substitutes | 5 percent of tutor positions |
| Professional Development | As with all teachers, 6 additional PD days for each certified Pupil Support position |
| Instructional Materials | $10 per FRPL pupil for each of 4 programs (tutors, extended day, summer school and pupil support) |
| **Students with Mild and Moderate Disabilities\*** |  |
| Special Education – mild and moderate disabilities | 1.0 teacher and 1.0 aide for every 150 regular students (to be used to provide special education services) |
| Substitute | 5 percent of teacher and tutor positions |
| Professional Development | As with all teachers, 6 additional PD days for each certified SPED position |
| Instructional Materials | $10 for every regular student to be used to provide special education services |
| **Career and Technical Education** |  |
| Equipment Resources | $9,000 per CTE teacher FTE |

\*Special Education for students with severe and profound disabilities is 100% state funded with a state-level aid program.

**Table 1.3**

**EB Model Resources for Pre-K Programs**

|  |  |
| --- | --- |
| **School Element** | Pre-K Programs |
| Program Configuration | Pre-K |
| Prototypical Program Size | 150 |
| Class size | 15 |
| Length of Teacher Contract | 192 days:  Instruction: 174, Holiday: 4  Open/Close Schools & Parent Conferences: 4, Prof. Dev.: 10  (total includes 6 additional PD days) |
| **Personnel Resources** |  |
| Core Content Teachers | 10 |
| Specialist Teachers | 20% more  2.0 |
| Instructional Coaches | 1 per 200 students:  0.75 |
| Total Core Content, Specialist, and Coach Teachers | 12.75 |
| Pupil Support | 1 FTE support position for every 100 FRPL students  1.5 |
| Special Education – mild and moderate disabilities\* | 1. Teacher and 1.0 Aide for every 150 regular students (to be used to provide special education services)   1.0 Teacher, 1.0 Aide |
| Substitute Teachers | 5% extra classroom, specialist, SPED & instructional coaches: 0.78 |
| Instructional Aides | 1 per classroom: 10 |
| Supervisory Aides | 0.75 |
| Assistant Principal/ Program Coordinator | 1.0 |
| Program Site Secretary | 1.0 |
| **Dollar per Pupil** |  |
| 17. Professional development | $100/student |
| 18. Technology/equipment | $250/student |
| Instructional Materials including Library Resources | $140/student |
| Short Cycle formative Assessments | $25/student |

\*Special Education for students with severe and profound disabilities is 100% state funded.

**Table 1.4**

**EB Model for Small Districts**



**Table 4.5**

**Central Office Prototype**



## Evidence-Based Methodology

The KY EB Model is built beginning at the school level and subsequently aggregated to the district and state levels. At each of these levels, prototypes of schools, districts, and the state are used to produce the cost of education. Additionally, for those components not included in the EB Model, expenditures are “carried forward.” Reliable, comparable revenues data are only available at the district and state levels in the current KY data collection, so estimates of differences are made at these two levels.

The two situations in which school level characteristics influence district level outputs are in the cases of a school designated as an alternative school or a necessarily small, remote school. In these cases we use a different formula from the prototypical school.[[3]](#footnote-3) Regardless of whether a school is designated small or alternative, the resources for each school are aggregated up to the district, where additional small district prototypes exist, and then to the state level to compare the EB resources to the SEEK revenues. The intent is that, at the appropriate level (district and state), actual 2012-13 revenues may be compared to what the EB Model would have produced in the same 2012-13 school year, hence a difference in costs of KY education towards adequacy. Additional funds are in the system due to some districts expending more funding than deemed necessary by the EB model. These funds are not recaptured.

The excel-based EB Model that accompanies this report is a simulation that may be used to estimate how a change to any formula or ratio or per pupil dollar figure will affect the cost of implementing the model. The model is designed to make multiple policy decisions concurrently, as all input decisions are tied to all aspects of the model. Any individual policy decision will have a fiscal impact, and multiple policy decisions will have a different impact than any individual decision—this allows a better estimate of the overall effect of any and all changes to the model.

### Compensation Levels

As personnel Full-Time Equivalents (FTEs) and personnel compensation are the major cost of the education system, Picus Odden & Associates is explicit about the salary and benefit levels used throughout the EB Model. Working with KDE, Legislative Research Council, and district-level Business Officers, average salary levels are used in the model (see Table 1.6, below). All professional compensation, due to model design approved by the Advisory Committee, is adjusted by a Comparable Wage Index to compensate for the ability to attract similar talent to schools and districts in different regions.

**Table 1.7**

**Salary, Benefit, and Compensation Levels**

|  |  |  |  |
| --- | --- | --- | --- |
| **Position (1)** | **Salary (2)** | **Benefits (3)** | **Compensation (4)** |
| **School Level** |  |  |  |
| Principal | $57,626 | $18,194 | $75,819 |
| Asst. principal | $56,521 | $17,845 | $74,366 |
| Teacher | $50,890 | $16,067 | $66,956 |
| Guidance Counselor | $58,242 | $18,388 | $76,630 |
| Media Librarian | $49,305 | $15,566 | $64,871 |
| School Nurse | $32,610 | $10,296 | $42,906 |
| Secretary/Clerical | $22,593 | $14,762 | $37,355 |
| Supervisory/Instruct Aide | $15,116 | $9,877 | $24,993 |
| **District Level** |  |  |  |
| Superintendent | $119,971 | $37,877 | $157,848 |
| Asst. Superintendent | $58,579 | $18,495 | $77,074 |
| Directors | $55,763 | $17,606 | $73,369 |
| Accounting Clerk | $29,538 | $19,300 | $48,838 |
| Accounts Payable | $36,232 | $23,673 | $59,905 |
| Secretary/Clerical | $22,593 | $14,762 | $37,355 |
| Custodian | $23,109 | $15,099 | $38,208 |
| Groundskeeper | $27,917 | $18,241 | $46,157 |
| Maintenance | $32,204 | $21,042 | $53,246 |

Positions (column 1) indicates the positions used in the model for the prototypes. Salary levels (column 2) are KY’s 2012-13 average salary for these positions, based on salaries of all KY personnel supplied by KDE. Picus Odden & Associates calculated weighted average salary levels for these positions. Note that the salaries of Teacher, Tutor, Guidance Counselor, and Media Librarian each include increases for six additional professional development days added to the school calendar, respectively an increase of $1,624, $1,624, $1,859, and $1,574, based on a 182 day school year. These salary and contract increases apply to all personnel who work on a teacher salary schedule. Finally, column 3 shows the total compensation for these positions.

Benefit levels are 31.57 percent for certified staff and 65.34 percent for classified staff, a weighted average across these two positions types. The benefit rates are detailed in Table 1.8, using weighted average salaries of certified and classified staff salaries for benefits percentages. What KY generally considers “On Behalf” benefit payments at the state level are brought down to the school and district position levels throughout the model. We use these data as benefit estimates for average compensation levels in the EB Model.

**Table 1.8**

**Benefit Levels for Certified and Classified Staff**

|  |  |  |  |
| --- | --- | --- | --- |
| **Position (1)** | **Benefit (2)** | **Benefit Rate (3)** | **Benefit Cost (4)** |
| **Certified Staff** | Employer Life Insurance (a) | 0.12% | $58 |
| **$50,047** | Medicare | 1.45% | $726 |
|  | Unemployment (d) | 0.12% | $60 |
|  | Worker's Comp (c) | 0.23% | $115 |
|  | KTRS-Local Board | 1.00% | $500 |
|  | KTRS-State Level | 14.11% | $7,059 |
|  | Health Insurance ($7,206) (b) | 14.40% | $7,206 |
|  | State Admin Fee (e) | 0.15% | $76 |
|  | **Total Benefits--Certified** | **31.57%** | **$15,801** |
|  |  |  |  |
| **Classified Staff** | Employer Life Insurance (a) | 0.17% | $32 |
| **$19,454** | FICA | 6.20% | $1,206 |
|  | Medicare | 1.45% | $282 |
|  | Unemployment (d) | 0.31% | $60 |
|  | Worker's Comp (c) | 0.23% | $45 |
|  | CERS | 19.55% | $3,803 |
|  | Health Insurance ($7,206) (b) | 37.04% | $7,206 |
|  | State Admin Fee (e) | 0.39% | $76 |
|  | **Total Benefits--Classified** | **65.34%** | **$12,711** |

1. Employer Provided Life Insurance may vary from district to district. Most districts provide the amount of annual employee salary, (0.84%). Additionally, the State provides a life insurance policy on all full-time employees of $20,000 total amount per FT employee. (0.032% prof/0.083% support). Both are combined and shown in the percentage reflected in the table above.
2. Health insurance—selected based on Single Enhanced Non-Smoking Plan available in 2012-13.
3. Worker’s Compensation will vary from district to district due to district’s unique insurance rating.
4. Unemployment is 1% of first $6,000 of gross wages ($60.00/year). Forced percentage based on standardized salary levels chosen.
5. State Administration Fee for 2012-2013 was $76.32 for each employee qualifying for benefits. The pro-rate percentages for prof/non-prof shown in the table above.

### Regional Cost Adjustments

The Comparable Wage Index (CWI) is applied to professional personnel compensation throughout the model. Essentially, any time professional compensation (certified, not classified personnel), is necessary to determine costs, this compensation is adjusted by an index specifically calculated for school and district staff. In situations in which per-pupil figures are determined from models that include professional staff (e.g. Central Office, PK education, and Small District Adjustments), the proportion of professional staff to model cost is determined, and then we apply the CWI proportionally (Taylor, 2011; Taylor & Fowler, 2006).

The KY CWI ranges from 0.91 to 1.17. Fifteen CWI values exist in the model and each district is assigned one value to apply to its professional staff. This is the method by which compensation is comparable across regions of the state (i.e. the adequate cost to hire similarly qualified people given the amenities and disamenities of any area of Kentucky, known via the labor market demands of similar positions (Taylor, 2013). This CWI also reflects regions that may be a part of labor market across state lines, such as is the case of Boone County and Cincinnati. (See Appendix A for specific cost adjustments applied to compensation across districts).

**Carry Forwards**

A number of components of the education system are not modeled in the EB Approach. For each of these components, we “carry forward” actual 20012-13 revenues district by district and for the state. So, while these components have no effect on the difference in cost between the EB Model and SEEK revenues, by carrying them forward, we have a more complete picture of the cost of education in KY.

The carry forwards include food service, community services, adult education operations, facilities, debt service, fund transfers, (unprorated) transportation, KDE operations, and KY school for the Blind/Deaf general fund allocation. The value of these carry forwards are detailed in the Results section of this document.

### Key Findings

In 2012-13 KY education revenues reached $7.83 billion, including $5.91 billion at the district level, as well as $1.10 billion in On-Behalf benefit payments, $20.95 million for Kentucky Department of Education, and $16.13 million for Kentucky schools for the Blind and Deaf at the state level.

During the 2012-13 school year, the EB model suggests that all districts could reach adequacy with roughly $9.40 billion in the education system, or approximately $2.44 billion (25.98 percent) over the expenditures in the system. This $9.40 billion equates to $13,130 per pupil (ADM).

The difference between current school district revenues and our projection of adequate funding varies across the state’s 174 school districts ranging from $9,285 per-pupil below the adequacy model to $3,721 per-pupil above the adequacy model estimate. Only one district (Anchorage Independent) spent above the adequacy level. This study does not determine from what source (i.e. local, state, or federal), resources are necessary to bring all districts to an adequate level.[[4]](#footnote-4) All data exclude resources received from federal programs. Therefore, when policymakers determine adequacy, they must also consider that additional federal resources may be available (and were received in 2012-13) and are outside of the adequacy model purview.

Table 1.9 shows several components of the EB model, including small school and small district adjustments; the EB costs total $7.25 billion. The table also includes several components of several items not addressed by the EB model and “carried forward” for all districts; the carried forward amounts total $2.15 billion. When added together these two major items total $9.40 billion.

**Table 1.9**

**Total EB Model Costs[[5]](#footnote-5)**



Table 1.10 shows the FTE and costs of all the staffing components of the EB model, as well as the costs of all the per pupil elements of the EB model. Note that Low Income strategies serve students with free *and reduced* price lunch (as opposed counts of free priced lunch status) and allocates significantly more than the current system at $2,436 per low income student. English learners receive slightly less at $765.64 per EL student. Special Education, using the census approach, comes to $661.01 per every student in a district. The Small School Adjustment (schools under 50 students) provides an additional $40.43 million. The KY EB Model.xls document includes further breakdowns in these categories at the district as well as the school levels, providing detail of personnel and costs that relate to the EB Adequacy approach to school finance.

# Conclusion

Based on existing scholarly evidence of program effectiveness and the input of several KY stakeholders, Picus Odden & Associates created a KY school finance model that produces a rationale for providing adequate funding for all KY students. The information in this document, as well as Adequacy and Equity for Excellence: Report 1, guides policymakers towards creating a system that is fiscally adequate. Coupling these reports with the excel-based KY EB Model, a transparent and program-based understanding of adequacy emerges.

The fiscal implications of this work are great. As policymakers determine how and when to implement programs and policies recommended by Picus Odden & Association, in conjunction with KY leaders, the information supplied will be of great use.

**Table 1.10**

**Core KY EB Model Resources**



# Appendix A: ky Comparable wage index (2005-06)



# Appendix B: District Comparisons between EB Model and 2012-13 SEEK Revenues



**Appendix B: District Comparisons between EB Model and 2012-13 SEEK Revenues (cont., pg. 2)**



**Appendix B: District Comparisons between EB Model and 2012-13 SEEK Revenues (cont., pg. 3)**



**Appendix B: District Comparisons between EB Model and 2012-13 SEEK Revenues (cont., pg. 4)**



**Appendix B: District Comparisons between EB Model and 2012-13 SEEK Revenues (cont., pg. 5)**



**Appendix B: District Comparisons between EB Model and 2012-13 SEEK Revenues (cont., pg. 6)**



# Appendix C: Technical Aspects and Functionality of EB Excel-based model

A great deal functionality exists to alter model parameters and to view data. These functions are discussed below, after the technological specifications are discussed.

## Technological specifications

The Evidence-Based Model is built on a PC platform using Excel Professional 2010. Users may experience errors if they attempt to use certain functions of the model on a Mac platform or a different (primarily earlier) version of Excel. Most of the worksheets of KY EB Model.xls are locked so as not to interfere with the Excel programming and data consistency.

To update the model when changing simulation parameters, certain steps must be taken to install the statistical software necessary to run Macros, the programming language of Excel. Simulations will work only if these tasks are performed before simulation attempts:

1) Microsoft ToolPak must be enabled

2) Microsoft ToolPak-VBA must be enabled

3) “Macros” must be enabled

4) All files must be “save target as” or similar to your desktop or another drive—no file will work if opened within an internet browser

If you receive error messages when using the ctrl-r (refresh) or other similar functions described below, ensure the previous 4 steps have been taken, then delete any previous versions of your file, and download again the Excel document.

## Functionality to Alter Model Parameters

Most of the components of the Evidence-Based model may be altered by use of the “Inputs” worksheet in the model. These changes range from class sizes to teacher salary levels—most of the policy levers of interest in and surrounding the EB prototypes. When a change is made on the Inputs worksheet, it will permeate the entire model, making changes at the school, district, and state levels.

After a change is made on the Inputs worksheet, the user must press ctrl-r, which will refresh the data and the output worksheets. These updates are made behind the model through Macro. As output worksheets contain many tables to update, this process may take a couple of minutes, depending on the speed of the computer in use.

## Functionality to View Data

Whether changing a parameter to determine its affect at the school, district, or state level or to simply view data at these levels, three interactive worksheets allow the user in-depth personnel and cost data at these levels. State Summary Table, District Summary Tables, and School Summary Tables allow access to all output, which is based on the parameters of the Inputs worksheet, which default to the parameters decided upon by the Advisory Committee of this project.

Again, these parameters may be changed. After the user presses ctrl-r, these tables will update with new personnel and cost data.

# References

Taylor, Lori L. (2011). *A Comparative Wage Index.* Retrieved on 6/24/2014 at <http://bush.tamu.edu/research/faculty/taylor_CWI/>.

Taylor, Lori L., & Fowler, William J. (2006). *A comparative wage approach to geographic cost adjustment*. Washington, DC: National Center for Education Statistics.

1. Note that in this model health, retirement, and technology “On-Behalf” expenditures have been brought from the state level to the district level to more accurately estimate the revenues of a school and district. [↑](#footnote-ref-1)
2. To use the functionality available in KY EB Model.xls, see Appendix C. [↑](#footnote-ref-2)
3. The small school prototype includes one Assistant Principal and a 1/7 teacher/student ratio in addition to special education and per-student fiscal resources (e.g., activities, professional development, technology and equipment, and materials). [↑](#footnote-ref-3)
4. Note that in this model health, retirement, and technology “On-Behalf” expenditures have been brought from the state level to the district level to more accurately estimate the revenues of a school and district. [↑](#footnote-ref-4)
5. Reliable data on the number of Continuing and Technical Education (CTE) teachers is not available. However, we estimate the filled and unfilled teacher positions to be 450. EB model parameters suggest an additional $9,000 per CTE FTE, for a cost of about $4.0 million, which is not included in this these models. [↑](#footnote-ref-5)