Appendix C: Standards of Quality descriptions and funding accounts

Under the Virginia constitution, the Board of Education (BOE) and the General Assembly are required to establish Standards of Quality (SOQs) for public education. Between 1972 and 1982, BOE prescribed the SOQs for each biennium, which were subsequently adopted by the General Assembly with revisions. In 1984, the General Assembly codified the SOQs. Although the term "SOQs" is typically used to describe the staffing standards related to funding, there are actually seven standards for public education (Table C-1). Standard 2 is the only standard that deals with school division staffing requirements, and it is the only standard that is directly used to help determine the amount of SOQ funding that school divisions need. Not all staffing standards are established in Standard 2; some additional standards are set in the appropriation act and BOE regulations.

TABLE C-1
Virginia's Standards of Quality

Standard	Description	Directly drives SOQ funding
1. Standards of Learning (SOLs)	Directs BOE to establish SOLs in regulation and sets some specific requirements for what SOLs must include. Requires local school boards to develop and implement instructional programs aligned with the SOLs, including some specific requirements for what those programs must include.	No
2. Staffing	**Sets specific instructional and support staffing requirements, mainly through staff-to-student ratios, that school divisions must meet.**	**Yes**
3. Standards of Accreditation (SOAs)	Directs BOE to establish SOAs in regulation and sets some specific requirements for what SOAs must include. Directs BOE to prescribe regulations for assessing student SOL achievement as part of accreditation determination. Requires local school boards to review accreditation status of their schools.	No
4. Graduation requirements	Directs BOE to establish standard and alternative graduation diploma requirements for students and sets some specific requirements and waivers. Requires local school boards to award diplomas to students who meet graduation requirements.	No
5. Professional development	Requires local school boards to provide high-quality professional development programs for teachers and staff. Sets some specific requirements for what programs must include.	No
6. Planning	Directs BOE to develop comprehensive, long-range plan for education and sets some specific requirements for the plan, including a requirement to report on SOQ compliance. Requires local school boards to develop comprehensive division plans, and for each school to develop its own plan.	No
7. Policies	Requires local school boards to develop and maintain policy manuals and sets some specific requirements for the types of policies to be included.	No

SOURCES: Code of Virginia Title 22.1. Education, Chapter 13.2. Standards of Quality; VDOE Summary of the Standards of Quality (2016).
NOTE: In addition to the seven standards, the Code section on SOQs also establishes laws related to SOQ compliance and creates the Exemplar School Recognition Program.

SOQ funding for school divisions is divided into twelve accounts (Table C-2). The largest account is Basic Aid, which is effectively a block grant that school divisions can use to pay for any expense. The second largest account is funding from a statewide retail sales tax dedicated to education, which compliments Basic Aid and also functions as a block grant. Funding provided through other accounts is supposed to go towards a designated purpose. The Virginia Department of Education staff indicated Remedial Summer School is technically not an SOQ account, but it is counted as an SOQ account here because of how it is treated in the appropriation act.

TABLE C-2
Virginia's Standards of Quality funding accounts

		State share of funding	
SOQ account	**Description**	**FY23**	**FY24**
Basic Aid	Block grant	$3,733 million	$3,762 million
Sales Tax	Block grant	1,739	1,641
VRS Retirement	For VRS retirement plan contributions, including retiree health care credit	520	522
Special Education	For instructional staff for special education	428	429
Social Security	For federal payroll Social Security taxes	223	224
Prevention, Intervention, Remediation	Block grant "for remediation purposes" but also allowed to be for English learner teachers and for early reading intervention	126	126
English as a Second Language	For instructional staff for English learners	98	107
Textbooks	For physical or electronic textbooks and other resources and equipment needed for instruction	90	90
Vocational Education	For instructional staff for career and technical education	71	71
Gifted Education	For instructional staff for gifted education	39	39
Remedial Summer School	For operation of remedial summer school sessions or intersessions (in the case of year-round schools)	23	23
Group Life	For VRS group life insurance program contributions	16	16
Total		7,106	7,049

SOURCE: 2022 appropriation act for FY23-FY24 (Chapter 2).

The SOQ funding for four instructional programs—Special Education; Prevention, Intervention, Remediation; Vocational Education; and Gifted Education—are spread across several different accounts. The SOQ accounts designated for these programs only show funding for staff salaries. For example,

the Gifted Education account only shows funding for gifted teacher salaries. Funding for benefits and payroll taxes associated with staff salaries are captured separately under the accounts for Basic Aid (health care insurance benefits), VRS Retirement, Social Security, and Group Life. Additionally, the four instructional program accounts only include *teacher* salaries or, in the case of special education, *teachers and aides*. For example, funding for special education related services staff, such as speech therapists, are not included in the special education funding amount. Finally, the funds in the four instructional accounts do not include any non-staffing costs, such as material and supply costs or contracted services.

SOQ funding accounts for two of the instructional programs—English as a Second Language and Remedial Summer School—do include funding for salaries, benefits, and payroll taxes. However, the English as a Second language account only includes funding for English language *teachers* and not any other support staff or any non-staffing costs. Remedial Summer School funding also appears to be based on teacher compensation only and not other costs associated with these programs.

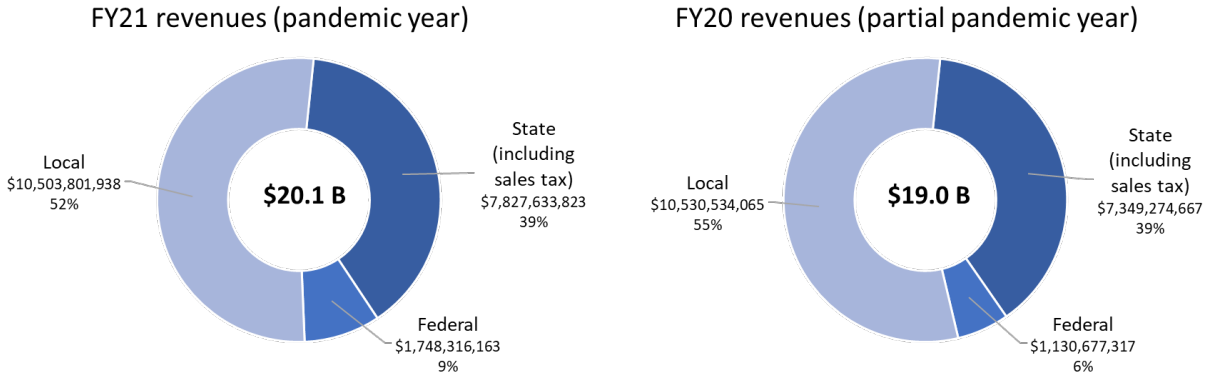
Appendix D: School division revenues and expenditures

The revenues and expenditures presented here are for FY20 and FY21. While the most recent complete and accurate school division funding data is for FY22, the FY22 expenditure data is skewed by the inclusion of some unknown portion of $3 billion in one-time federal pandemic funds. Any analysis of FY22 K–12 operations expenditures would not be able to disentangle one-time from ongoing funding, meaning FY22 is not representative of actual ongoing funding. FY21 revenues and expenditures, while not as skewed, were also not typical of a given school year. For example, FY21 revenues from school food service were exceptionally low, because many schools were operating remotely for most or all of the year, and many of the schools that were meeting in-person were receiving federal funds for food service and were not charging students for food. Consequently FY20, the most recent *partial* pre-pandemic year, best represents typical school division revenues and expenditures.

Total revenues reported by Virginia school divisions

Revenues reported by Virginia school divisions totaled $19.0 billion in FY20, the last year that revenues were only partially affected by the pandemic, and $20.1 billion in FY21 (Figure D-1). Revenues included K–12 operating revenues and revenues for capital expenditures, debt service, and non-K–12 programs (pre-kindergarten, community programs, and adult education). Revenues came from state, local, and federal sources. Local sources accounted for slightly over half of all revenue school divisions received, and state sources accounted for over one-third. Federal funds were the smallest source of revenue, although they increased 55 percent from FY20 to FY21 because of a $604 million influx of pandemic relief funds (for FY20, divisions only reported $55M in federal pandemic relief funds). A complete breakdown of each revenue category follows on the next page for FY20, the last funding year that was not majorly affected by the pandemic (Table D-1).

FIGURE D-1
Total revenues reported by Virginia school divisons



SOURCE: JLARC analysis of DOE Superintendent's Annual Report data.
NOTE: Includes all revenue, including revenue intended for capital and non-K-12 purposes. FY21 included $604M in one-time federal pandemic relief revenues, and total federal revenues were 55% more than the prior year. Revenues in some other areas, such as other local revenues, declined and partially offset this gain. FY20 included $55M in one-time federal pandemic revenues but otherwise appeared to be a normal revenue year. To avoid double counting, totals do not include tuition revenue received by senior partners in school division partnerships.

TABLE D-1: Virginia school division revenue sources (FY20)

State	$7,349	
State SOQ	**6,205**	**84%**
Basic Aid	3,284	
Sales Tax	1,504	
Retirement	443	
Special Education	396	
Social Security	201	
Prevention, Intervention, Remediation	112	
Textbooks	70	
English Learners	65	
Career & Technical Education	58	
Gifted Education	35	
Remedial Summer School	22	
Group Life Insurance	14	
State Incentive	**421**	**6%**
Compensation Supplement	200	
Special Education Regional Programs	89	
At Risk Add On *(split funded)*	54	
VPSA Technology Grants	51	
Governor's Schools	14	
State Incentive Other[a]	13	
State Lottery	**600**	**8%**
Per Pupil Funding Supplement	255	
K-3 Class Size Reduction	125	
At Risk Add On *(split funded)*	70	
Virginia Preschool Initiative *(split funded)*	64	
Early Reading Intervention	26	
SOL Algebra Readiness	14	
Career & Technical Education	10	
Foster Children	10	
State Lottery Other[b]	26	
State Categorical	**55**	**1%**
Special Education[c]	41	
School Lunch	5	
Virtual Virginia	5	
State Categorical Other[d]	3	
State Other	**68**	**1%**
Benefits from Other State Agencies	32	
State Other Other[e]	36	

Local	$10,531	
Local Budget Appropriations[f]	**$9,232**	**88%**
Operations	8,552	
Capital Outlay	315	
Debt Service	365	
Local Loans, Bonds & Investments	**$919**	**9%**
Bonds	861	
Loans	37	
Investments[g]	21	
Local Other	**$380**	**4%**
School Food Service	149	
Rebates & Refunds	28	
Student Fees	25	
Tuition from Private Sources	25	
Tuition & Other Payments from Other Localities[h]	22	
E-Rate Funds for High-Speed Internet	15	
Donations	15	
Rents	13	
Local Other[i]	88	

Federal	$1,131	
Federal Direct to Divisions	**133**	**12%**
Impact Aid - Title VII	46	
Head Start	33	
Federal Direct Other[j]	54	
Federal VDOE Pass Through	**998**	**88%**
Nutrition programs (includes one-time CARES)[k]	348	
Special Education - IDEA, Part B	259	
Low Income Student Assistance - Title I (all parts)	260	
Improving Teacher Quality - Title II, Part A	32	
Career & Technical Education - Perkins	19	
English Learners - Title III, Part A	12	
Student Support & Enrichment	12	
21st Century Schools - Title IV, Part B	12	
Adult Literacy	10	
Federal VDOE Other (includes one-time CARES)[l]	33	

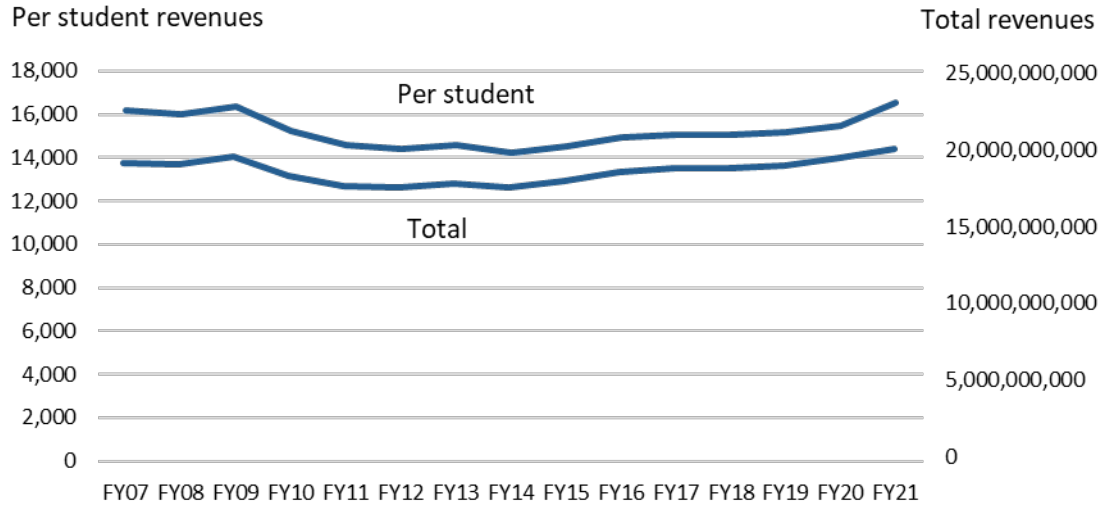
TOTAL REVENUES (MILLIONS)	**$19,010**

SOURCE: JLARC analysis of DOE Annual School Report data.

NOTES: [a] VPI (split funded with Lottery), Security System Grants, Nutrition, Specialist Initiatives, various other. [b] Alternative Education, School Breakfast, GED programs (various), Basic Aid Supplement, Mentor Teacher, Industry Certification, Middle School Teachers, Project Graduation. [c] Special Education in State Hospitals, Clinics, and Detention Centers, Jails, and Homebound. [d] Adult Literacy, Adult Education, Indian Children. [e] Start-up Grants, National Board Teacher Certification Bonus, undefined, and various other. [f] A small portion of local budget appropriations are from special district levies. [g] Investments includes interest on investments and bank notes, proceeds from investment sales. [h] Adjusted to remove tuition payments from division partnerships. [i] Insurance, Transportation, Sale of Equipment, Buses, Supplies, & Textbooks, Fines & Forfeits, Royalties, Undefined. [j] JROTC, USDA Cash in Lieu of Commodities, Gear-Up, and undefined. [k] NSLP, Breakfast, SFSP, Fresh Fruits and Vegetables, Child Nutrition Discretionary Grant, and Special Milk Program for Children. l Special Ed Pre-K, School Improvement, Rural and Low Income Schools, other CARES/ESSER funding, various other.

School division revenues have followed a distinct trend line over the past 15 years (Figure D-2). Revenues were at their height from FY07 to FY09, after recovering from the 2001 recession. Revenues then declined sharply in FY10 following the Great Recession. Revenues remained stagnant for several years after and then started trending back up toward pre-Great Recession levels. By FY20 revenues were close to their FY09 levels, in both total and per student amounts. By FY21, revenues exceeded FY09 on a total and per student basis. The trend curve is nearly identical for the total and per student revenue amounts, except that the per student amount ticks up more in FY21 because of the effect of pandemic-related enrollment loss. State and local revenues followed the same general pattern as total revenues, although local appropriations for K-12 operations (excluding capital revenues) recovered more quickly than state appropriations (which included little capital funding). Local government appropriations for operations had returned to FY09 levels by FY18, whereas state funding did not return to FY09 levels until FY21.

FIGURE D-2
Total revenues reported by Virginia school divisions FY07–FY21 (inflation adjusted)



SOURCE: JLARC analysis of DOE Superintendent's Annual Report data.
NOTE: All values are adjusted for inflation to FY21 constant dollars. To avoid double counting, totals do not include tuition revenue received by senior partners in school division partnerships. Includes all revenues, including revenues for capital and non-K-12 purposes.

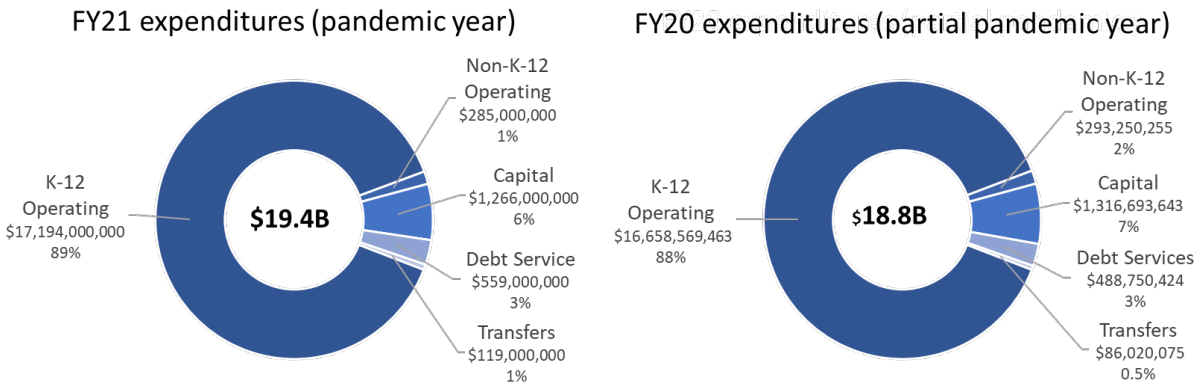
Total expenditures reported by Virginia school divisions

Expenditures reported by Virginia school divisions totaled $19.4 billion in FY20, the last pre-pandemic funding year, and $19.4 billion in FY21 (Figure D-3, next page). Most expenditures were K-12 operating expenditures, followed by capital and debt service. FY20 and FY21 expenditures were lower than revenues for those years because revenues for capital project and one-time federal pandemic relief did not have to be spent in the same year that they were received.

Similar to revenues, school division expenditures have followed a distinct trend line over the past 15years (Figure D-4). Per student expenditures were at their height from FY07 to FY09, declined sharply in FY10 following the Great Recession, and then started trending back up toward pre-Great Recession levels. By FY21, per student expenditures were almost returned to their FY09 levels. Looking at the per-student expenditures by major category, K-12 operating expenditures in FY21 were up slightly (+3%) compared

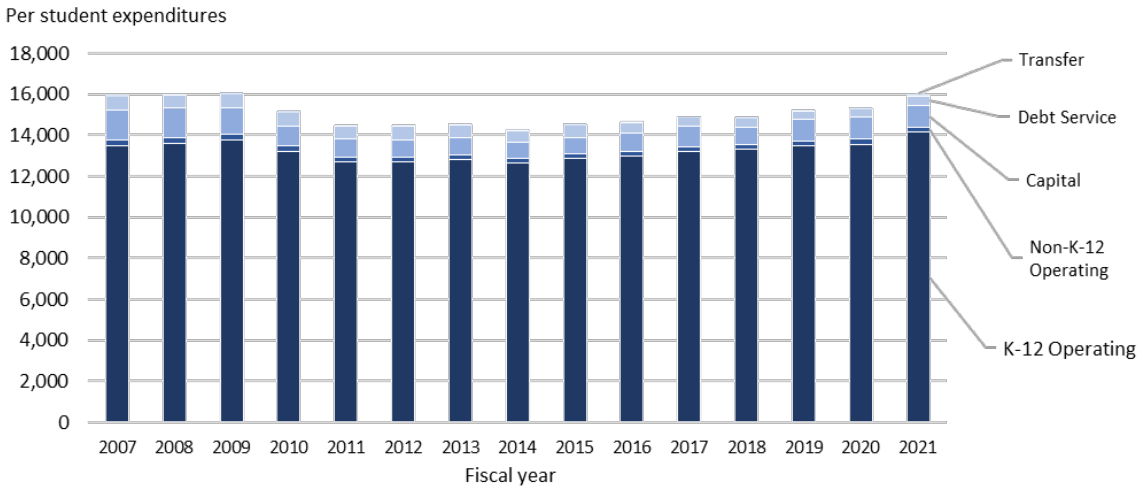
to FY09. However, FY21 per pupil expenditures in other categories remained substantially lower than they were in FY09: Non-K-12 Operating (-14%), Capital (-19%), and Debt Service (-33%). There were of course substantial differences in expenditure trends at the individual division level.

FIGURE D-3
Total expenditures reported by Virginia school divisons



SOURCE: JLARC analysis of VDOE anunual financial report data.

FIGURE D-4
Per-student expenditures reported by Virginia school divisions FY07-FY21 (inflation adjusted)



SOURCE: JLARC analysis of VDOE anunual financial report data.

K-12 operating expenditures are the largest single category of spending, and the vast majority of these expenditures are for instruction. Regular instruction is the largest instructional program, followed by special education. Employee compensation, including pay and benefits, is the largest expense object. K-12 operating expenditures by type are summarized in Table D-2.

TABLE D-2: Virginia school division K-12 operating expenditures by type (FY21)

Functional area		
	Expenditures	**Percent of total**
Instructional	$11,703,981,547	68%
Operations, maintenance, & facilities	$1,667,788,631	10%
School office	$982,926,005	6%
Student health & support services [b]	$951,040,055	6%
Transportation	$756,108,704	4%
Central office	$595,348,882	3%
Food services	$536,856,336	3%
	$17,194,050,159	

Instructional program		
	Expenditures	**Percent of total**
Regular instruction [c]	$8,634,733,660	50%
Special education	$2,622,784,071	15%
Career and technical education	$477,235,846	3%
Gifted education	$379,611,167	2%
Other instructional [d]	$217,889,422	1%
Outside regular school [e]	$102,232,337	1%
Undistributed—Instructional technology [f]	$818,075,772	5%
Undistributed—Non-instructional programs	$3,941,487,884	23%
	$17,194,050,158	

Expenditure object		
	Expenditures	**Percent of total**
Salaries and wages (personal services)	$10,157,136,937	59%
Employee benefits and payroll taxes	$4,339,322,800	25%
Materials and supplies	$1,231,624,608	7%
Purchased services	$834,372,806	5%
Other charges [g]	$487,448,183	3%
Tuition payments to joint operations [h]	$95,063,744	1%
Internal services [i]	$49,081,080	0.3%
	$17,194,050,158	

SOURCE: JLARC analysis of VDOE Annual School Report data.
NOTES: **Functional area** is based off of VDOE function codes, modified slightly by JLARC staff to better approximate actual school division operations. **Instructional program** matches VDOE program codes with JLARC staff grouping some codes together and using other codes to differentiate undistributed (no program code) expenditures. **Expenditure object** matches VDOE object codes. [a] Includes classroom instruction and improvement of instruction; counseling and social work captured under student support and school office captured separately. [b] Includes counseling, social work, attendance services, and health services. [c] Includes general classroom, remedial, and English learner instruction. [d] Includes co-curricular activities, such as athletics, and non-K12 programs such as adult education, pre-K. [e] Includes remedial and non-remedial summer programs, after-school programs, and services provided outside of the regular public school such in state hospitals and detention homes. [f] Includes technology expenses related to classroom instruction and instructional support. [g] Includes telecommunications, utilities, insurance, travel, and other. [h] Tuition payments to governor's schools and regional programs. [f] Intragovernmental services provided by local governments, such as motor pool.

Appendix E: Criteria used to assess SOQ funding formula

State law does not establish criteria for assessing the SOQ funding formula, so JLARC staff developed criteria. These include Virginia-specific criteria that have been used in previous evaluations of the SOQ funding formula and other criteria that have been commonly used in evaluations of education funding formulas in other states (Table 1-1). The criteria are applied as relevant throughout the report.

The Virginia-specific criteria are derived from the original SOQ task force and two subsequent attorney general opinions.

- *The Task Force for Financing the Standards of Quality* was created by the governor and consisted of key members of the General Assembly, staff of the Attorney General's office, DOE officials, and others. Its purpose was to determine how to fund the then-new SOQs. (1972–1973).
- *Attorney General opinions* are legal advice that represent the office's analysis of current law based on research of existing statutes, the Virginia and United States constitutions, and relevant court decisions. They are not "rulings" and do not create new law, nor do they change existing law. (1973, 1983)

For the first Virginia-specific criterion, the attorney general concluded the assumptions and calculations used in the SOQ formula should have a clear and justifiable rationale related to actual expenses. They should not be "arbitrary figures" or "arbitrary estimates." For the second criterion, both the attorney general and the task force concluded the funding obligations estimated under the formula should be "realistic" and reflect "actual" and "prevailing" costs.

The other criteria used in this study were developed by national researchers and experts in state education funding. These criteria have been commonly used in evaluations of education funding formulas in other states. The criteria are accuracy, fairness, predictability, and transparency.

TABLE E-1

JLARC criteria for assessing Virginia's SOQ funding formula

Virginia-specific criteria	
1.	**Clear and justifiable rationale**
	There are clear reasons for the established staffing ratios, funding calculations, or other elements of the formula that are justified based on actual practices or established purposes.
2.	**Reflects prevailing practice**
	Staffing and other formula assumptions are comprehensive and generally reflect what is actually seen in practice at the division and statewide levels, including differences in costs among divisions.
Other commonly used criteria	
3.	**Accurate**
	The formula uses the most accurate data inputs, staffing and cost assumptions, and calculation methods available.
4.	**Fair**
	The formula fairly accounts for differences among divisions that can affect funding needs, such as differences in size, cost of labor, number of higher need students, and local government's ability to pay.
5.	**Predictable**
	The formula provides relatively consistent funding from year to year, with no drastic or unexpected changes, so that all parties can reasonably predict future costs and budget appropriately.
6.	**Transparent**
	It is clear to stakeholders how funding obligations are calculated under the formula and how much funding school divisions will receive from all sources.

SOURCE: JLARC reports and K–12 education funding research literature.

Appendix F: Special education staffing and funding

This appendix provides additional information and analysis on how the SOQ formula allocates funds to school divisions for special education.

Most state funding for special education (80 percent) is provided through the SOQ formula. The SOQ formula includes a staffing standard for special education teachers and a staffing standard for special education aides. The share of funding that falls outside of the SOQ formula is largely for reimbursement of regional special education program costs and for services provided outside of the school building, such as services to students in state-operated mental health facilities and children's hospitals.

This appendix focuses on SOQ-required staffing and funding for special education. Staffing and funding discussions are limited to staff who are directly employed by school divisions. This excludes staff employed by regional special education programs and state-operated programs. Staffing and funding related to students in private school placements under the Comprehensive Services Act are also excluded (the Act provides separate public funding for special education students determined to need a private placement).

Special education staffing needs are driven by number of students and services required under their individualized education programs

Special education students are those identified as needing additional instruction and support services to achieve in school. Services for students are established in each student's individualized education program (IEP), as required under federal law. IEP service requirements drive what staffing is needed. For example, if IEPs require some students to be placed in self-contained classrooms, the division will need to have the teachers and aides necessary to support those classrooms. If IEPs require other students to be educated in the general classroom, the division will need to provide special education teachers or aides to assist in the general classroom (a co-teaching model) or provide additional services outside the general classroom.

The type and level of services special education students need varies significantly from one student to the next. For example, a student diagnosed with dyslexia may be in a general classroom most of the day and receive specialized reading services for a few hours a week outside the classroom, while a student diagnosed with autism who has challenging behaviors may need to be placed in a self-contained classroom. State and federal law establish 14 disability categories: (1) autism, (2) deaf-blindness, (3) deafness, (4) developmental delay, (5) emotional disability, (6) hearing impairment, (7) intellectual disability, (8) multiple disabilities, (9) orthopedic impairment, (10) other health impairment (e.g., ADHD, executive function impairments), (11) specific learning disability (Dyslexia & Dysgraphia), (12) Speech-Language Impairment, (13) Traumatic Brain Injury, and (14) visual impairment.

Special education teachers are the main providers of special education services. They lead self-contained classrooms, co-teach in general classrooms, and work with students outside of the classroom individually and in small groups. Special education aides can provide teachers with needed support. Aides provide additional adult supervision and enable teachers to maximize their instructional time. For example, a special education aide may help during lunch or snack time or help manage student behavior issues.

In addition to teachers and aides, several other positions are essential to providing special education related services. For example, a physical therapist may be needed to help students with cerebral palsy improve their motor skills, such as learning how to balance a cafeteria tray. An occupational therapist may be needed to teach a student with low muscle tone to write with a specialized pencil. Depending on the size of a school division, the division may directly employ staff in these related services positions or contract for services.

Other school division staff play critical roles in identifying and supporting special education students. School psychologists are the division leads for testing students and helping develop IEPs. Behavior analysts monitor and work with students to help solve problematic behaviors. School nurses assist with the special medical needs that some students may have, from dispensing medication to supervising tube feeding.

SOQ formula allocates less staff than number actually employed by divisions and what K–12 staffing workgroups suggest is needed

The SOQ formula under-calculates the number of special education teachers needed, compared to actual staffing and the staffing levels recommended by Virginia K-12 staffing needs workgroups. (In fall 2022, JLARC convened seven workgroups to discuss staffing needs; see Appendix B.) For FY23, the SOQ formula calculated 13,300 special education teachers were needed, which was 93 percent of the number actually employed by school divisions and 66 percent of what workgroups estimated was needed. Special education staff additionally indicated that staffing in many divisions is lower than what they believe it should be. In a 2020 JLARC survey of special education directors, 54 percent of respondents said that Virginia's caseload standards do not adequately reflect staffing needed to provide an appropriate education for students with disabilities.

The SOQ formula also calculates fewer special education aides than how many are employed or staffing levels the workgroups suggested, and the differences here were much greater than for teachers. Statewide, the SOQ formula calculated that 1,700 special education aides were needed in FY23. However, divisions actually employed 11,400 aides, almost seven times what the formula calculated. Workgroups recommended 15,800 special education aides, more than nine times the formula's calculations.

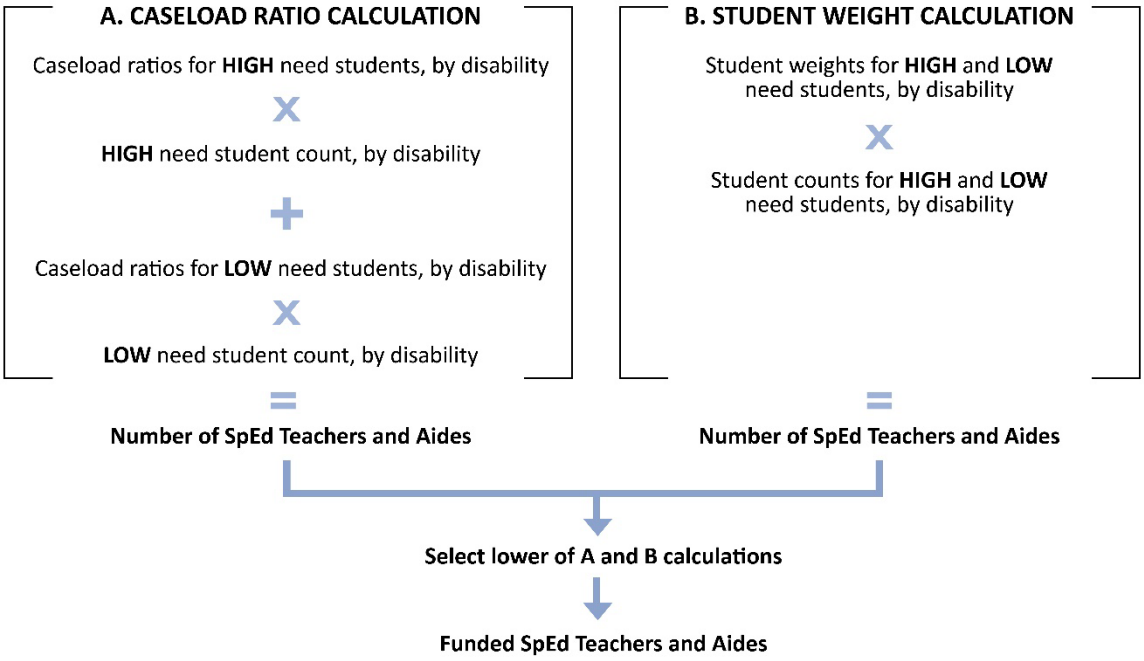
The formula also calculates fewer other positions that provide services and support to special education. Staffing for psychologists, nurses, behavior analysts, and related services positions—such as physical therapists, occupational therapists, and audiologists—are covered in the new fixed staffing ratio of three specialized support staff per 1,000 students. As discussed in Chapter 3, these ratios are lower than the number recommended by national associations and the K–12 staffing workgroups. The number of positions calculated using this ratio is projected to exceed actual division employment in FY22; it is 24 percent of what workgroups estimated was needed.

SOQ formula allocates less staff because of staffing standards and calculation methods

The SOQ calculations for special education teachers and aides are much more complicated than other staffing calculations. For each school division, the formula calculates the number of special education

teachers and aides needed in two ways using two different sets of staffing standards (Figure F-1). The first calculation is based on student-teacher *caseload ratios* that are greater or smaller depending on a student's disability category and time spent in the general classroom. This calculation assumes high and low needs students are educated in separate classrooms, with high needs students in self-contained classrooms and low needs students in the general classroom. The second calculation is based on *student weights* that are also greater or smaller depending on disability and time in the general classroom. However, this calculation assumes all students, regardless of need level, are educated in a single classroom together. After staffing needs have been calculated both ways, the SOQ formula funds whichever calculation results in *lower* costs.

Figure F-1: Special education teacher and instructional aides calculation is highly complex



SOURCE: JLARC review of VDOE internal documents.
NOTE: VDOE categorizes students who spend more than 50% of their time in a general classroom as lower need students and those who spend 50% or less as higher need. Autism, deaf-blindness, developmental delay, emotional disability, hearing impairment/deaf, intellectual disability, learning disability, orthopedic impairment, other health impairment, and traumatic brain injury are distinct categories of disability in the SOQ special education funding formula.

The special education teacher and aide calculations, as a whole, calculate fewer staff than are actually employed or what workgroups suggest may be needed. However, due to the complexity of the calculations, JLARC staff were unable to determine if this was mainly due to the staffing standards, the calculation methods, or the policy of selecting the lower of the two calculated amounts. For example, the formula uses more than 60 staffing ratios and student weights, depending on different combinations of student disabilities and time spent in the general classroom. There was not sufficient data available to compare actual staffing to the ratios under each of these different possible combinations.

To improve the state's current, resource-based staffing standards, additional research would be needed on the resource needs of special education students. For example, research is needed to determine what effective staffing levels would be based on, considering the many different combinations of student service needs and classroom settings. Further study would also need to explore the most appropriate way to differentiate staffing standards. For example, while Virginia and many other states calculate funding based on disability category and time spent in the general classroom, some states attempt to estimate service needs in different ways. (See *K-12 Special Education in Virginia*, JLARC 2020.) The funding formulas used by some other states do not attempt to account for service level differences.

SOQ formula results in less funding than needed for compensation of special education teachers and aides

In addition to underestimating the number of special education teachers and aides, the SOQ formula also underestimates the cost of compensation compared to what divisions actually spend. The formula relies on the same prevailing salaries that are used for general teachers and aides. As discussed in Chapter 4, these salary assumptions tend to underestimate actual salaries paid by a majority of school divisions, and funding for salary increases (through compensation supplements) has not kept pace with inflation or growth in actual salaries.

If compensation for already hard-to-fill special education positions is too low, then filling these positions becomes even more challenging. Since 2003, special education has been one of the top teacher shortage areas reported by VDOE. Compensation was the second most cited contributor to difficulties recruiting and retaining special education teachers in a 2020 JLARC's survey of division special education directors. Forty-five percent of survey respondents said that dissatisfaction with compensation contributed to difficulties recruiting and hiring special education teachers, and 41 percent of respondents said that it contributed to difficulties retaining teachers. Some division directors asserted that special education teachers should be paid more because they are so hard to recruit and retain.

Conclusion about special education staffing and compensation

Any changes to special education staffing standards or salary assumptions would need to align more broadly with the state's goals for special education and how special education is actually provided in practice. Compared to general K–12 funding, special education funding formulas and spending rules are subject to several unique considerations. Any new special education staffing standards would need to be designed in a way that does not provide a financial incentive to make inappropriate service need determinations. For example, it should not incentivize over- or under-identification of special education students or placements in self-contained classrooms and separate schools. Special education funding design would also need to account for other complex policy considerations outside the scope of this study, such as Medicaid reimbursement, federal and state oversight, federal maintenance of effort requirements, and whether state funding should be based on actual or assumed counts of special education students.

There may be less complex ways to fund special education teachers and aides, such as using a student-based formula derived directly from the cost of serving students. This approach may be especially

relevant for special education, where student service needs do not clearly align with current staffing standards. Student-based funding formulas are discussed in Chapter 9.

Appendix G: English learner staffing and funding

This appendix provides additional information and analysis on how the SOQ formula allocates funds to school divisions for students who are English learners.

English learners require specialized instruction and may require other resources to succeed in school. English learner instruction programs vary significantly across Virginia school divisions. English learners typically spend some if not most of their day in general education classrooms but will sometimes receive instruction in their home language in a separate classroom. In addition to directly instructing English learners, English learner (EL) teachers advise and collaborate with general classroom teachers. Other school division staff also support English learners; counselors develop student graduation plans, liaisons connect parents to the school system (often in their primary language), and administrators coordinate English proficiency tests.

English learner staffing needs are driven by number, concentration, and language proficiency of students

The number of EL teachers a school division needs depends on the number and concentration of its English learner students. Generally, if a division has more English learner students, it will need more EL teachers to work with those students. However, divisions with more students can achieve economies of scale by having teachers work with small groups of students instead of individuals or requiring general instruction teachers to become dual certified as EL teachers.

The number of EL teachers needed also depends on how English learners in a given division are distributed across schools and classrooms. EL teachers have to coordinate and collaborate with each student's general education teacher and understand each student's curriculum. If an elementary school has English learners in three different grades and classrooms, the EL teacher who works with those students will have to collaborate with three different teachers. EL teachers who work with middle and high school students have to collaborate with multiple teachers across different subjects. Coordination can become more challenging for divisions with small numbers of English learners. For example, if a division has a small number of English learners spread across two high schools, it might have a single EL teacher who has to collaborate with 10 or more teachers at two different locations.

The lower a student's English proficiency, the more dedicated time the student needs from an EL teacher. For example, a student with only rudimentary proficiency may be able to understand simple English instructions but will have difficulty following the theme of a lesson taught in English. EL teachers need to spend more one-on-one time with these students to help them grasp the language so they can effectively learn and succeed in school.

Moreover, the number of different languages spoken in a division play a role in each division's staffing needs. All divisions typically seek to educate students whose first language is Spanish. However, dozens of different languages may be spoken within certain large, urban or suburban school divisions. There may be fewer different languages spoken in smaller rural divisions.

SOQ formula allocates fewer staff and funds than actually found in school divisions and what Virginia K–12 workgroups suggest is needed

The staffing standard for EL teachers calculates fewer positions than divisions employ or workgroups estimate are needed. (In fall 2022, JLARC convened seven workgroups to discuss staffing needs; see Appendix B.) All state funding for English learners is provided through the SOQ funding formula, using a fixed staffing ratio of one EL teacher SOQ to 50 English learners. In FY23, the number of EL teachers calculated (2,600) was 77 percent of the number actually employed by school divisions. The number of EL teachers calculated was 48 percent of the number estimated needed by workgroups.

Not funding enough EL teachers can contribute to understaffing, which affects student achievement. When a division or school has too few EL teachers, teachers can become responsible for too many students, allowing them less time to spend with each student and slowing student progress overall. One workgroup member described excessively high caseloads of over 100 EL students, which made it impossible to teach students effectively or even remember some students' names.

EL teacher salaries and (most benefits) are funded using the same salaries that the SOQ formula calculates for other instructional staff. As discussed in Chapter 4, the salary assumptions used in the formula tend to underestimate actual salaries paid by a majority of school divisions, and funding for salary increases (through compensation supplements) have not kept pace with inflation or actual growth in salaries. This means the SOQ formula is likely underestimating the cost of compensation for EL teachers in a majority of school divisions. The difference between state salary assumptions and actual salaries could possibly be more pronounced for EL teachers, because there are disproportionately more EL students and teachers in the more urban and suburban regions of the state, where labor costs are the highest.

SOQ formula does not account for other instructional and support staff needed for English learners

While the SOQ formula has a staffing standard for EL teachers, it does not recognize how English learner students create the need for more staff in other areas. Other instructional and support staff are vital to support English learners, according to experts and professional associations. School divisions may need to provide their general education teachers with more instructional support and coaching so that they can work effectively with English learners. Divisions must also take on additional administrative tasks related to English learners, such as managing intake processes for new students, coordinating annual testing, counseling, and tracking EL-specific federal funding. Divisions also need to help families navigate the school system, which can include family outreach, interpreters at meetings, and translation of division forms and informational material.

At smaller school divisions with few English learners, EL teachers may be able to absorb additional instructional and support responsibilities. However, divisions with larger English learner populations need additional staff to carry out these duties (Case Studies, next page). The Virginia K–12 workgroups estimated that, in addition to EL teachers, 3,800 other positions were needed to serve EL students in FY23. In total, those positions averaged one full position per 34 English learners.

CASE STUDIES

Serving EL students requires more than just EL teachers

A Northern Virginia school division with 16,000 English learners employs a program director, EL teacher supervisors, a case manager, intake staff, and a parent liaison.

A Valley school division with 1,000 English learners employs a family engagement liaison, database administrator, office assistant, two registrars, and a part-time central office director. Both contract for translation services.

While the *types* of additional EL positions recommended by the workgroups are generally included in the state's staffing standards, the standards do not account for the potential additional staff needed for divisions with more English learner students. However, determining how many staff to add is complicated because divisions with enough English learners can start achieving economies of scale. Increasing staffing ratios for instructional and support positions to reflect current actual practices, as recommended in Chapter 8, should help address support needs of English learners.

Appendix H: Additional technical issues with SOQ formula

In addition to the issues identified in Chapters 3–7, there are other technical aspects of the SOQ formula that lack a clear and justifiable rationale and reduce the accuracy of the formula's estimates.

SOQ formula does not have a clearly justified rationale for which enrollment projections are used

The SOQ formula uses projections of student enrollment as a key part of its funding calculations during the biennial re-benchmarking process. Projections are used in some calculations (instead of actual historical enrollment) because enrollment changes from one year to the next, and projections try and account for these changes.

The Virginia Department of Education (VDOE) is responsible for developing enrollment projections. Absent any statutory guidance, VDOE has developed its own methodology. VDOE calculates three projections: one based on the most recent year-to-year change, one based on the two most recent year-to-year changes, and, if a division shows an increasing or decreasing rate of enrollment change across the two years, an enrollment projection based the average of the two previous calculations. VDOE selects one of these three projections to use as the final projection in the SOQ formula.

While VDOE has developed a reasonable methodology for generating enrollment projections, it has not set clear rules for which of the three calculated enrollment projections are used. VDOE budget staff reported that they had used varying criteria to select an enrollment projection during rebenchmarking but that there was no requirement to select a particular projection.

More clearly defined and consistently applied rules for enrollment projection selection are needed because they directly affect how much funding divisions receive. In the final SOQ calculations, enrollment projections are used to upwardly or downwardly adjust the number of funded positions and used to estimate total "non-personal" costs (aside from pupil transportation). JLARC staff estimated that, between FY15 and FY21, a 1 percent change in projected average daily membership (a key measure of enrollment) was associated with a 0.94 percent change in the total SOQ cost estimate for a division.

Many other states have clearly defined rules for selecting an enrollment measure/projection for funding purposes. Some states, such as Illinois and Missouri, specify that schools are funded based on the highest of two or more enrollment figures.

Facilities and transportation staff are not fully accounted for in Cost of Competing Adjustment (COCA) and compensation supplement calculations

Two support staff position categories are treated differently than other position categories: transportation staff and facilities staff. All school divisions employ some transportation staff, such as bus drivers and mechanics. Some large school divisions employ facilities staff, such as project coordinators and tradespersons. For example, a large division might employ a project coordinator to oversee its school construction and rehabilitation projects. Unlike other staff, state funding for transportation and facilities staff is not calculated using a staffing ratio. Instead, when calculating prevailing costs, the

formula groups staff salaries and benefits expenditures with all other transportation and facilities expenditures.

Transportation and facilities staff are not accounted for in COCA calculations, and divisions receiving the COCA do not get additional funds for these positions. The COCA calculations should be consistent in accounting for differences in the cost of labor, regardless of differences in how funding for the positions are calculated. Even though the funding calculations for transportation and facilities staff are not like other funding calculations, VDOE appears to have sufficient data to separate and use labor costs for these positions and apply the COCA.

Facilities staff (but not transportation staff) are also excluded from compensation supplement calculations, meaning that the supplements do not provide additional funding for these positions like they do for other SOQ-recognized positions. Since facilities staff are SOQ-funded support staff, they should be accounted for in the compensation supplements.

Inflation caps set in the Appropriation Act limit the ability of the SOQ formula to keep current with changes in some cost assumptions

As discussed in Chapter 4, the SOQ formula updates most cost assumptions, except for salary assumptions, to account for the two-year gap between when data is collected and the start of the biennia. The formula does this by applying inflation adjustments to most non-personal cost categories, the health-care cost assumption, transportation cost assumptions, and the SOQ textbook account per pupil amount.

Since FY07 the appropriation act has capped these inflation amounts. The cap fully funds the first 3 percent of inflation and then half of the next 4 percent, up to a total of 5 percent. The low inflation environment of the late 2000s and early to mid-2010s meant that, until recently, the cap did not come into effect. However, between 2019 and 2022 the cap reduced inflation amounts applied within the SOQ formula by an average of 1.03 percentage points, equivalent to a 20 percent reduction. This translated to about a $9.4 million reduction in state funding in FY22 (Table H-1).

TABLE H-1
Cap on inflation has reduced state funding in recent years

Year	Total division reduction in state funding due to inflation cap
2017	$59,232
2018	57,988
2019	8,741,866
2020	8,639,965
2021	9,960,125
2022	9,364,706

SOURCE: JLARC analysis of Annual School Report data, re-benchmarking presentations, and appropriation acts.
NOTE: Amounts are inflation adjusted using in FY21 dollars. Amounts do not include impact of inflation on transportation costs and therefore slightly underestimate total impact of inflation cap.

Inflations caps are not uncommon because they provide additional certainty regarding future funding. Similar caps on inflation are used in other functional areas, including the cost of living adjustment provided to retirees through the Virginia Retirement System.

Appendix I: Revenue Capacity Index calculation (Example)

A revenue capacity index (RCI) could be used to replace the current local composite index (LCI). The RCI calculates how much revenue a locality can generate from wealth bases using statewide average tax rates (yield rates) applied to the actual associated revenues generated by each locality.

TABLE I-1
Data required for calculating Revenue Capacity Index

Source and Data	Location and Description	Current use
APA Comparative Report of Local Government	Comparative Reports page	
Real Property Tax Revenue	Exhibit B, Column E	FSI
Public Service Corporation (PSC) Property Tax Revenue	Exhibit B, Column G	FSI
Tangible Personal Property Tax Revenue	Sum of Exhibit B, Columns I and K	FSI
'Other' local revenue [a]	Exhibit A, Column G less the following revenues: Real Estate Tax, PSC Tax, Personal Property Tax, Local Option Sales Tax, Penalties and Interest (Exhibit B, Columns Q & S), Payments in Lieu of Taxes from Enterprise Activities (PILOT), Revenue Sharing Agreement Payments, and Intergovernmental payments due to annexation agreements (last three available through APA on Form 200 for each locality).	FSI
Local Option Sales Tax Revenue	Exhibit B2, Column E	FSI
TAX Assessment/Sales Ratio Study	Assessment Sales Ratio page	
True Value of Real Estate	Table 4	LCI
True Value of Public Service Corporations	Table 4	LCI
TAX Annual Report	Annual Reports page	
Total Adjusted Gross Income [b]	Table 1.5	LCI
Tangible Personal Property Values	Table 6.4	Other
VDOE Superintendent's Annual Report	Superintendent's Annual Reports page	
March 31st Unadjusted ADM	Table 1: Membership, Column D	LCI
Weldon-Cooper Center for Public Service, UVA	Population data overview	
July 1 Population Estimate	Cities and counties & the two towns with school divisions	LCI

SOURCE: JLARC adaptation of the Fiscal Stress Report methodology, obtained from DHCD.
NOTE: [a] 'Other' revenue is equivalent to the sum of 17 smaller revenue sources not collected by all localities. This includes consumer utility taxes; business, franchise, and motor vehicle license taxes; bank stock taxes; recordation and will taxes; tobacco tax; admission taxes; hotel and motel room taxes; restaurant food taxes; coal, oil, and gas taxes; permits, privilege fees, and regulatory licenses; fines and forfeitures; revenue from the use of money and property; and other smaller and miscellaneous revenues [b] Adjusted gross income data used in RCI formula is identical to that already reported by TAX and used by the Virginia Department of Education for the LCI.

The RCI calculations would use a combination of data that is already collected by the state for the LCI, other wealth data used for the Department of Housing and Community Development's calculation of the fiscal stress index (FSI), or other purposes. The main raw data for the RCI is provided in Table I-1 (previous page).

JLARC staff calculated the RCI using three main steps.

1. calculate statewide average yield rates for real and public service corporation (PSC) property taxes, tangible personal property (TPP) tax, and 'other' local taxes;
2. calculate the revenue capacity for each of the main sources and aggregate them to calculate total local revenue capacity; and
3. calculate the final RCI by comparing local revenue capacity to total statewide average revenue capacity, per pupil and per capita.

Figure I-1
Steps to calculate the RCI

Step 1. Calculate statewide average yield rates for real property, personal property, and 'other'

$$Statewide\ avg.\ yield\ rate = \frac{\sum revenue}{\sum associated\ tax\ base}$$

Step 2a. Calculate revenue capacity for each tax base in each locality

$$Real\ property\ rev.\ capacity = total\ local\ true\ value * statewide\ avg.\ real\ property\ yield\ rate$$

$$TPP\ revenue\ capacity = total\ local\ TPP\ value * statewide\ avg.\ TPP\ yield\ rate$$

$$'Other'\ rev.\ capacity = total\ adjusted\ gross\ income * statewide\ avg.\ 'other'\ yield\ rate$$

Step 2b. Calculate total revenue capacity for each locality

$$\begin{aligned}&(True\ value\ property * real\ property\ yield) +\\ &(Personal\ property\ values * personal\ property\ yield) +\\ &(Total\ adjusted\ gross\ income * other\ yield) +\\ &Local\ sales\ tax\ revenue\\ &\hline \boldsymbol{Total\ Local\ Revenue\ Capacity}\end{aligned}$$

Step 3. Calculate RCI

$$\frac{1}{2} * \left(\frac{local\ revenue\ capacity\ per\ pupil}{state\ revenue\ capacity\ per\ pupil}\right) + \frac{1}{2} * \left(\frac{local\ revenue\ capacity\ per\ capita}{state\ revenue\ capacity\ per\ capita}\right) * 0.45 = RCI$$

SOURCE: JLARC recreation of RCI calculation methodology.

The RCI first calculates statewide average tax yield rates to make localities comparable to each other and control for differences in local taxation decisions. The one exception is the sales tax yield rate, which does not need to be calculated because local 1 percent option sales tax is fixed in statute. Yield rate for 'other' revenue is calculated using 'other' revenue as the numerator and total adjusted gross income (AGI) as the denominator. Previous JLARC studies identify AGI as an appropriate tax base proxy for a unified 'other' revenues measure. The final result of the base revenue capacity calculation (Step 2b) is a measure of how much revenue a locality *could* generate if it implemented the statewide

average tax rate. For example, if County A had a revenue capacity per capita of $2,000, it is theoretically capable of raising $2,000 per person in total revenues if it taxed at the statewide average for each of the main tax bases.

In step 3, the locality is compared to the statewide average revenue capacity per pupil and per capita. The result of both halves of this equation can be read as the relative revenue capacity of the locality compared to the statewide average. For example, if the per pupil local-state revenue capacity ratio equals 1.05, then that locality has a revenue capacity approximately 5 percent greater than the statewide average per pupil. The RCI would find that, in per pupil terms, that locality could raise more revenues than the average locality statewide for education and should receive less state aid for public education.

The RCI modeled by JLARC staff weights the service population (ADM, student enrollment) and revenue generating population (local population estimate) equally. This makes theoretical sense because a good ability to pay formula for public education would take into account the demand on the locality for services via student population and the people generating the revenues for those services, but would *not* emphasize one population more than the other. Weighting the populations equally accounts for differences in both ability to generate revenues and service burden.

After combining the equally weighted per pupil and per capita halves of the RCI, a final weight of 0.45, or 45 percent, is applied to fit the prevailing local share of all localities to approximately 45 percent of the total SOQ funding obligations. The same 0.45 weight is currently applied in the LCI calculation. As discussed in the main report body, the 55 percent state and 45 percent local split for public education was a policy decision from 1993, when localities were asked to start helping to pay for K–12 fringe benefits. (Retirement benefits had originally been completely funded by the state.)

Appendix J. New SOQ at-risk program (Example)

JLARC staff reviewed the Virginia Department of Education's (VDOE) budget calculation files to identify formulas and data sources used to calculate funding for the Prevention, Intervention and Remediation (PIR) program and At-Risk Add-On program. Staff concluded that the programs should ultimately be replaced by a single SOQ At-Risk funding program. The new program should calculate and distribute funding in two parts: 1) a flat per student amount provided for every at-risk student at each school division and 2) an additional variable per student amount that is based on each division's concentration of poverty (COP). The flat and COP at-risk amounts could be determined by applying designated rates to the per student Basic Aid amount that is calculated for each division.

New program should use Identified Student Percentages (ISP) to measure student poverty

JLARC staff modeled the costs associated with implementing a new SOQ At-Risk program using a different measure of student poverty than is used under the current PIR and At-Risk Add-On calculations. Unlike the current programs, the new program should rely on the weighted three-year average April 1 Identified Student Percentage (ISP) for each division to estimate the count of free lunch eligible students. ISP is determined based on student participation in government benefits programs, such as Temporary Assistance for Needy Families (TANF), Supplemental Nutrition Assistance Program (SNAP), Medicaid, etc. Starting in 2020, ISP is uniformly calculated for every school division and now provides the most consistent measure of school-level student poverty. The modified free lunch data used in current funding formulas is out-of-date and spans several different years. The free lunch eligibility data compiled by the VDOE Office of School Nutrition Programs (OSNP), while much more accurate than the current measures used for funding programs, does not provide a consistent measure of student poverty across divisions. The OSNP free lunch eligibility data draws from both free lunch applications and ISPs, and so does not consistently measure poverty across divisions, and spans multiple years because of how eligibility is determined under federal guidance. (These limitations only mean OSNP free lunch data is not ideal for use as a poverty measure in state funding programs; the data appears to satisfy the needs of state and federal nutrition programs.)

Although ISP is the most accurate and consistent measure available for measuring student poverty, research into the ISP has found that it needs to be weighted to better approximate free lunch eligibility. The weight applied to the three-year average April 1 ISP can fall in the range of 1.2 to 1.6, as recommended by the federal government. The General Assembly could choose to use any weight in this range, at its discretion. For this appendix, and in the modeling conducted by JLARC, a weight of 1.6 is used.

Finally, ISP needs to be converted from a percentage to an actual student count. JLARC staff determined the free lunch eligible student count by multiplying the weighted ISP by the projected March 31 unadjusted averaged daily membership. These are the same membership numbers that are used in the current SOQ calculations.

New program funding calculation methodology

Estimating at-risk student enrollment

At-risk student enrollment should be estimated using the three-year average, weighted April 1 ISP multiplied by the projected Unadjusted March 31 average daily membership for each school division. (The ISP weight used is 1.6.) As an example, Norfolk City Public Schools has a three-year average, April 1 weighted ISP of 84.7 percent and a projected March 31st unadjusted ADM for FY23 of 25,342. The estimated projected enrollment of at-risk students for Norfolk City Public Schools equals 21,468.

Flat at-risk amount

A division's flat per student amount is calculated by applying a flat rate to the Basic Aid per pupil amount (PPA) for each division. JLARC staff modeled a flat rate of 19 percent. To determine the total amount each division should receive from the flat rate, the flat per student amount was multiplied by the estimated projected enrollment of at-risk students for the division.

Flat at-risk amount for each division =

$$(Basic\ Aid\ PPA * Flat\ percentage\ rate) * (three - year\ average\ weighted\ April\ 1\ ISP * Projected\ Unadj.\ March\ 31\ ADM)$$

For example, Norfolk City's FY23 Basic Aid PPA is $6,835, and the estimated projected enrollment of at-risk students in FY23 equals 21,468. Using a flat rate of 19 percent, then the total flat at-risk amount for Norfolk City would equal approximately $27.8 million.

Concentration of Poverty at-risk amount

The COP add-on could be calculated using a methodology based on the method used for the current At-Risk Add-On program. Under this approach, each division is ranked based on its student poverty level. The new formula could use the three-year average weighted April 1st ISP as its measure of student poverty. A variable COP rate could then be then assigned to each division, ranging from 1 percent for the division with the lowest concentration of poverty, up to a designated maximum percentage. JLARC staff modeled a variable COP rate range of 1 percent to 20.6 percent. A division's COP per student amount was then calculated by applying the variable COP rate to the Basic Aid PPA for each division. Finally, to determine the total amount each division would receive from the variable COP rate, the COP per student amount was multiplied by the projected enrollment of at-risk students for the division.

COP at-risk amount for each division =

$$(Basic\ Aid\ PPA * COP\ percentage\ rate) * (three - year\ average\ weighted\ April\ 1\ ISP * Projected\ Unadj.\ March\ 31\ ADM)$$

Using an example where the COP rate range is from 1 percent to 20.6 percent, the division with the lowest three-year average weighted April 1 ISP would receive the minimum 1 percent COP rate (Falls Church), and the division with the highest concentration of poverty would receive the maximum 19.45 percent rate (Brunswick). Norfolk City's three-year average weighted April 1 ISP of 84.7 percent

would rank 26th out of 134 divisions, with a COP add-on of 17.42 percent for a total COP add-on entitlement of approximately $25.6 million for FY23.

Total at-risk amount

The total amount of funding provided to each school division under the new At-Risk Program would be determined by adding the flat at-risk amount and the COP at-risk amount together. For example, the funding provided under the new At-Risk SOQ account for Norfolk City would be $27.8 million plus $25.5 million, for a combined total of $53.3 million in FY23.

The flat and COP rates modeled by JLARC ensure that, *statewide*, 60 percent of the new At-Risk Program funding would be provided under the flat rate and 40 percent would be provided under the variable COP rate. However, the funding percentages would be different for each individual division, depending on its concentration of student poverty. For example, for a higher poverty school division like Norfolk City, the funding split would be 52.1 percent flat and 47.9 percent COP.

State and Local Shares of total

The total amount of funding calculated for each division would be split between state and local shares based on the Local Composite Index that is currently used in the SOQ formula. Although the report recommends and presents policy options for changing the LCI, the calculation that JLARC modeled uses the current LCI.

Using the Norfolk City example, the city has an LCI of 0.3064 for the FY23–24 biennium. If Norfolk was provided with $53.3 million in total at-risk funding under the new program, that total would include a $37 million state share and a $16.3 million local share.

JLARC staff modeled rates designed to provide at-risk funding equivalent to what current programs would provide if they used ISP to determine student poverty

The flat rate and COP rate are the two elements of the new At-Risk Program calculations that can be set based on the discretion of the General Assembly. Depending on where the rates are set, school divisions would receive more or less at-risk funding.

JLARC staff modeled a flat rate of 19 percent and a variable COP rate ranging from 1 to 20.6 percent. JLARC staff selected these rates for two reasons. First, JLARC staff determined that the total amount of state funding provided under the new At-Risk Program should be equal to the total amount provided under the PIR and At-Risk Add-On programs *if* those programs also used the three-year average ISP to measure student poverty. The selected rates provide a total state funding amount of $777.7 million, which is the same amount of state funding that would be provided under the other two programs if ISP were used. Second, in Chapter 6, JLARC staff found that school divisions should receive a sufficient base amount of funding for each at-risk student, regardless of the concentration of student poverty within the division, but that divisions with higher concentrations of poverty do still need more funding. The rates modeled by JLARC would ensure that 60 percent of at-risk funding is provided under the flat per-student rate and distributed equitably across all divisions, and 40 percent is distributed under the variable COP per-student rate and mostly goes toward high poverty divisions. Additionally, these rates did not result in any divisions losing a significant amount of at-risk funding.

(A program change that uses different rates could reduce funding to some high poverty school divisions because they receive substantially more funding than others under the current At-Risk Add-On program.) The General Assembly could choose to adopt different flat and COP rates that increase or decrease funding or change how funding is directed to school divisions.

After the rates have been set, future funding amounts for each division would automatically increase or decrease based on changes in its Basic Aid PPA and at-risk student population. If a division's Basic Aid PPA increases or decreases over time, then the division would receive more or less money per student under the existing rates. If the at-risk student population increases or decreases, then the division would receive more or less at-risk funding total from the addition or loss of students. Funding changes would occur during the biennial SOQ re-benchmarking process.

Appendix K: Staffing ratios changes (Example)

This appendix provides further detail on potential changes to SOQ staffing ratios that JLARC staff modeled for this report. JLARC staff created a new list of staffing ratios by re-organizing and streamlining the existing ratios, and revising them to ensure all appropriate positions reported by school divisions are included.

Example staffing standards developed and modeled by JLARC staff

JLARC staff developed a new set of 20 example staffing ratios based on actual school division employment practices (Table K-1). These ratios were used to model the cost of new staffing ratios recommended in Chapter 8 (Recommendations 2 and 3). The ratios for the 12 positions for instruction, school leadership, instructional support, and student support would be fixed in statute. The eight positions for administration and operations could be regularly updated with prevailing data, similar to how these positions are currently calculated (prior to the support cap being applied), or fixed ratios could be established. In designing the example staffing ratios, JLARC's goal was to create categories that are easy to interpret, while reducing the total number of categories to minimize administrative burden. All positions are defined using existing Chart of Accounts functions, object, and cost center codes. Function codes describe the employee's *purpose* (e.g., instruction, health); object codes describe the employee's *role* (e.g., teacher, clerical); and cost center codes describe the *grades* they serve (primary, secondary, or division-wide).

JLARC designed its proposed staffing ratios to encompass almost all positions used by school divisions and group them by functional similarity. The classroom teachers ratio includes all teachers serving the general population: general classroom, elementary resource, gifted, and career and technical education teachers. There are separate ratios for English learner teachers, special education teachers, and special education aides because they serve more clearly and consistently defined student populations. A new ratio for general instruction aides has been created to replace the current kindergarten aide ratio and recognize aides who assist teachers in other grades. The instructional support category includes the current "instructional professional" category as well as similar positions that are excluded by current staffing standards because of the way they are reported by school divisions. The administrative category consists of low-wage non-instructional positions unless there was a rationale to differentiate them. It therefore includes several division-wide positions excluded by current staffing standards, because of the way they are reported by school divisions. The administrative positions with a sufficient rationale to be standalone were technological support because their average salary was higher, and operations and maintenance support because they have different retirement benefits. JLARC's definition of student support is slightly different than the specialized student support ratio that was recently created; JLARC's category excludes unlicensed nurses because their qualifications are more similar to administrative staff than licensed professionals. Also, JLARC's student support category includes other professionals (e.g., administrators working in student health with high salaries.)

TABLE K-1
Example staffing ratios based on actual prevailing employment levels

				Definition for modeling		
Category	**New JLARC staffing ratio**	**Versions [a]**	**Prevailing ratio (LWA) per 1,000 students [b]**	**Function**	**Object**	**Cost center [e]**
Instruction	Classroom teacher [c]		73.27	61100 (classroom instruction); 61230 (homebound instruction)	1120 (instructional)	Any
	English learner teacher		43.60	*N/a (defined using PEC)*		
	Special education teacher		*N/a, modeled using current standards*	*N/a (defined using PEC)*		
	Aide [d]		10.76	61100	1151 (instructional aide)	Any
	Special education aide		*N/a, modeled using current standards*	*N/a (defined using PEC)*		
School leadership & instructional support	Principal	Primary	*N/a, modeled using current standards*	61410	1126	2
		Secondary				3
	Assistant principal	Primary	1.90	61410	1127	2
		Secondary	2.72			3
	Librarian	Primary	2.27	61320	1122	2
		Secondary	1.72			3
	Instructional support		2.77	61100, 61210 (guidance), 61230 (homebound), 61300 (instructional support - staff)	1110 (administrator)	Any
				61230, 61300	1120 (instructional)	
	Reading and math specialist		1.64	*N/a (defined using PEC)*		
Student support	Counselor	Primary	3.00	61210	1120	2
		Secondary	4.09			3
	Health professional		3.49	61220 (social work), 62200 (attendance & health)	1110, 1130 (other professional, including social worker), 1131 (licensed nurse), 1132 (psychologist), 1135 (other licensed health/behavioral)	Any
Administration and operations	Superintendent		*N/a, modeled using current standards*	62120 (executive administration)	1112 (superintendent)	9

Assistant superintendent	.11	62120	1113 (assistant superintendent)	Any
Central office professionals	.98	62100 (administration)	1110, 1130	Any
Technology professionals	.52	68000 (technology)	1110, 1120, 1133 (technical developer)	Any
Technology support	1.51	68000	1140 (technical), 1141 (technical support), 1150 (clerical)	Any
Administrative	9.60	62200	1134 (unlicensed nurse)	Any
		61000, 62000	1140, 1150	Any
Operations and maintenance professionals	.31	64000 (operations & maintenance)	1110, 1130	Any
Operations and maintenance support	10.28	64000	1140, 1142 (security guard), 1150, 1160 (trades), 1180 (laborer), 1190 (service)	Any

SOURCE: JLARC analysis of VDOE Positions & Exits Collection data and Annual School Report data.
NOTE: JLARC staff determined the actual prevailing ratios using a linear weighted average, instead of a regular average, because this is the state's current practice. Excludes board members; JLARC is not proposing any changes to current funding calculation. [a] Follows current definition of primary encompassing kindergarten through 7th grade, secondary encompassing 8th through 12th grade. [b] To match current VDOE practice for calculating staffing numbers, support positions use FTE data from 2020 while instructional positions use FTE data from 2021. [c] After totaling the number of teachers reported on ASR, JLARC subtracted the number of English learner teachers, special education teachers, reading specialists, and math specialists reported on the 2022 PEC. [d] After totaling the number of instructional aides reported on ASR, JLARC subtracted the number of English learner and special education aides reported on the 2022 PEC. [e] Cost center of 2 is primary (kindergarten through 7th grade); cost center of 3 is secondary (8th through 12th grade); cost center of 9 is division-wide.

JLARC staff did not develop staffing ratios for positions that are currently funded using a non-ratio funding method or that are primarily funded by non-state dollars. Those positions are in the following four categories.

- Facilities (function 66000). Funding for facilities positions is included with all other funding for facilities.
- Food/enterprise (function 65000). Positions are mostly funded through federal nutrition programs, food sale revenues, and local funds.
- Transportation (function 63000). Funding for transportation positions is included with all other funding for transportation.
- Substitutes (object 1520). Funding for substitutes is included in basic aid on a per-teacher basis.

To calculate the example staffing ratios, JLARC staff had to draw on different data sources. The prevailing ratios could not be calculated from a single data source. JLARC staff used several different years of school division data, from two different data sources. Most data was from the 2020 or 2021

annual school report (ASR) submitted by school divisions to the Virginia Department of Education (VDOE). However, several positions were sourced from, or adjusted using, a separate VDOE data source: the 2022 Positions and Exits Collection (PEC) data. PEC is a new data set, and FY22 was the first year for which data was available. ASR data is what is currently used in the SOQ formula calculations and so should be considered the staffing data of record for SOQ calculations. However, the data is not sufficiently detailed to differentiate between different types of teacher and aide positions. Consequently, JLARC staff used combinations of ASR and PEC data to estimate the number of classroom teachers and aides, special education teachers and aides, and English learner teachers and aides. Additionally, PEC staffing data did not clearly differentiate primary and secondary teachers and aides, so blended salary assumptions were used when the costs of these positions were modeled for Chapter 8 (Recommendations 2 and 3).

If the legislature decides to update the SOQ staffing ratios to reflect current, actual practice, newer and more accurate data should be used. If JLARC's method of using both ASR and PEC data is followed, additional validation is needed of school division PEC submissions. The data used by JLARC was the first year of PEC collections and, while believed to be reasonably accurate, data quality should improve in future reporting cycles. If only ASR data is used, then VDOE would need to collect additional and more detailed data from school divisions on the number of staff employed in several different position categories, including classroom teachers and aides, special education teachers and aides, English learner teachers, reading specialists, and math specialists. If the General Assembly wanted to preserve separate staffing ratios for gifted education and career and technical education teachers, then VDOE would need to collect additional data on these position categories as well. To collect additional data on staffing, VDOE could create object codes for those positions or collect that data on a separate spreadsheet (as is currently done for IT staff).

Benchmark staffing standards at levels proposed by workgroups

JLARC staff also developed a new set of staffing ratios based on the ratios proposed by Virginia K–12 staffing needs workgroups (Table K-2). The workgroup recommendations were used to develop one of the funding benchmarks presented in Chapter 2. These staffing ratios could better ensure an effective education system in which students receive support they need.

In fall 2022, JLARC convened seven workgroups involving more than 40 Virginia teachers, principals, support staff, central office administrators, and program directors. Each workgroup was asked to estimate the type and number of staffing and other resources needed to operate schools of different types and sizes with higher or lower student need populations. JLARC staff modeled how much funding would be required to provide these staffing levels, under the current SOQ formula. Similar workgroups have been used by experts to estimate K–12 funding needs in at least 11 other states over the past decade.

It is important to understand that workgroup members were not tasked with proposing staffing standards. Instead, they were asked to propose the number of staff needed per position for several hypothetical school divisions varying in size and student need. Table K-2 reflects JLARC's conversion of their proposals for a hypothetical medium size, low need division into generalizable ratios. For example, the workgroups proposed five kindergarten teachers for the 82 kindergarten students in the hypothetical elementary school, which JLARC converted into a ratio of 1 kindergarten teacher per 16

elementary students. In some cases, the workgroups proposals differentiated positions by school level (elementary, middle, and high school), which JLARC consolidated into a division-wide metric.

TABLE K-2
Workgroup proposals

Category	New JLARC staffing standard	Position	Workgroup proposals [a]	
			FTE proposed	Per…
Instruction	Classroom teacher	Kindergarten	16	Students: kindergarten
		1st grade teacher	16	Students: 1st grade
		2nd grade teacher	16	Students: 2nd grade
		3rd grade teacher	21	Students: 3rd grade
		4th grade teacher	21	Students: 4th grade
		5th grade teacher	21	Students: 5th grade
		Elementary art/PE/music teacher	123	Students: kindergarten - 5th grade
		Elementary IT/other resource teacher	492	Students: kindergarten - 5th grade
		Middle school teacher	15	Students: 6th-8th grade
		High school teacher	17	Students: 9th-12th grade
	English learner teacher	English learner teacher	See Table K-3	Students, English learners
	Special education teacher	Special education teacher	10	Students, special education
		Adaptive physical education teacher	854	Students, special education
		Hearing/visually impaired teacher	569	Students, special education
		Special education transition teacher	78	Students, special education: 9th - 12th grade
		Speech language pathologist	107	Students, special education
	Aide	Kindergarten aide	16	Students: kindergarten
		1st grade aide	16	Students: 1st grade
		2nd grade aide	33	Students: 2nd grade
		3rd grade aide	82	Students: 3rd grade
		4th grade aide	164	Students: 4th grade
		5th grade aide	164	Students: 5th grade
		Remedial tutor	246	Students: kindergarten - 5th grade
		Behavioral aide	185	Students
	English learner aide	English learner aide	See Table K-3	Students, English learners
	Special education aide	Special education aide	11	Students, special education
		Special education job coach	52	Students, special education: 9th - 12th grade
School leadership & instructional support	Principal	Principal	1	School
	Assistant principal	Assistant principal	351	Students
	Librarian	Librarian	585	Students
	Instructional support	Dean	1,256	Students: 9th-12th grade
		Counselor director	1,256	Students: 9th-12th grade
		Extracurricular/athletic coordinator	1,256	Students: 9th-12th grade
		Athletic trainer	1,256	Students: 9th-12th grade
		Remedial teacher	167	Students
		Remedial teacher – supplemental for English learners	See Table K-3	Students, English learners

		Testing coordinator	1,003	Students
		Diagnostician	7,024	Students
		Counselor coordinator	7,024	Students
		504 coordinator	3,512	Students
		Instructional specialist	780	Students
		Director of instruction	2	Division
		Instructional support/leadership – supplemental for English learners	See Table K-3	Students, English learners
		Special education instructional coach	142	Students, special education
		Special education supervisor	285	Students, special education
Student support	Counselor	Counselor	185	Students
		Counselor – supplemental for English learners	See Table K-3	Students, English learners
	Health professional	Nurse	639	Students
		Nurse supervisor	7,024	Students
		Physical health coordinator	14,048	Students
		Social worker	502	Students
		Social worker – supplemental for English learners	See Table K-3	Students, English learners
		Social worker supervisor	14,048	Students
		Psychologist	702	Students
		Psychologist supervisor	14,048	Students
		Behavioral analyst	1,405	Students
		Physical or occupational therapist	214	Students, special education
		Director of student support	1	Division
Administration and operations	Superintendent	Superintendent	1	Division
	Assistant superintendent	Assistant superintendent	4,683	Students
	Central office professionals	Central office professional	1,022	Students
		Director of finance	1	Division
		Director of human resources	1	Division
	Technology professionals	IT resource teacher	702	Students
		Director of IT	1	Division
	Technology support	IT staff	1,277	Students
	Administrative	Library aide	702	Students
		Nurse aide	702	Students
		Family liaison	639	Students
		Family liaison – supplemental for English learners	See Table K-3	Students, English learners
		School-based administrative support	167	Students
		Central office administrative support	906	Students
		Administrative support – supplemental for English learners	See Table K-3	Students, English learners
		Administrative support – supplemental for special education	569	Students, special education

SOURCE: JLARC analysis of Virginia K-12 staffing workgroup meetings.
NOTE: Operations and maintenance staff were excluded from the workgroups' scope because of limited time. Therefore JLARC modeling of workgroup proposals for operations/maintenance professionals and operations/maintenance support used the prevailing ratio employed by school divisions (see Table K-1).

The workgroup proposed different ratios of English learner staff to English learners depending on the concentration of English learners in the hypothetical school divisions. Table K-3 indicates the

number of English learner staff, by position, proposed by the workgroup. For modeling purposes, JLARC assumed a linear relationship between the number of English learners and the number of staff proposed.

TABLE K-3
Workgroup proposals for English Learner staff

Position	English Learners	FTE
EL teacher [a]	12	2
	144	14
	1,120	58
	4,304	158
EL aide	144	0
	1,120	20
	4,304	32
EL remedial teacher	144	0
	4,304	24
EL instructional support/leadership	12	0
	144	2
	4,304	10
EL counselor	12	0
	144	1
	4,304	12
EL social worker	144	0
	4,304	18
EL family liaison	12	0
	144	1
	4,304	20
EL administrative support	144	0
	4,304	3

SOURCE: JLARC analysis of Virginia K-12 staffing workgroup meetings.
NOTE: For divisions exceeding 4,304 English learners, JLARC modeled the ratio proposed for 4,304 English learners. [a] JLARC applied to ratio proposed for 12 English learners to divisions below that number of English learners.

Appendix L: New cost of competing adjustment (Example)

JLARC staff identified several issues with the current cost of competing adjustment (COCA) used in the SOQ formula (Chapter 7), and this report recommends replacing the current COCA with a new COCA that is based on a cost of labor index (Chapter 8). This appendix provides additional details on methods for developing the comparative wage index (CWI) and calculating the new COCA, as well as some additional implementation considerations.

Overview of example COCA methodology

The new COCA would work as follows.

Step 1. Develop and update a Virginia labor cost estimate. The labor cost estimate provides the basis for the new COCA calculation. The labor cost estimate should be modeled on the national Comparative Wage Index for Teachers (CWIFT) and provide an estimate of the labor cost for every Virginia city and county. The index should use the most recently available American Community Survey (ACS) three-year estimates.

Step 2. Convert the labor cost estimate into an index value. Using the labor cost estimate calculated in step 1, match the city and county estimates with the relevant school division and convert the estimates into a cost of labor index by dividing each school division's cost of labor estimate by the average school division cost of labor estimate.

Step 3. Assign cost of competing adjustment. For localities that have labor costs that are above average, assign the index value calculated in step 2 as the cost of competing adjustment to be used in the SOQ formula calculations for the school division serving that locality. For localities that have average or below-average labor costs, assign a cost of competing adjustment of one (no increase or decrease).

Step 4. Make cost of competing adjustment in formula. Within the SOQ formula calculations, the COCA should be applied to salaries for staff funded through each SOQ account, similar to how it is currently used. The COCA should not be applied in a way that multiplies the effect of any separate economies of scale adjustment.

The above steps would generate a COCA that provides additional funds to school divisions that have above average labor costs, with the amount scaled to the difference between local labor costs and labor costs in the average school division. This is the approach that JLARC staff modeled for this report. The COCA could also be used to reduce funding for school divisions that have below average labor costs, though that may be practically difficult to implement because it could be viewed as reducing funds for divisions in less wealthy regions of the state.

The new labor cost index and COCA should be updated during the re-benchmarking process, because they will fluctuate from biennium to biennium.

The example methodology does not distinguish between instructional and support positions like the current COCA. As discussed in Chapter 7, the instructional and support distinctions have no bearing

on difference in labor costs. Labor costs do differ between "professional" salaried workers with advanced degrees and "non-professional" hourly wage workers, and the state could develop separate labor cost indices to account for this difference. However, non-professional workers (as currently defined by VDOE) are only about 8 percent of K–12 staff, and the gain in accuracy from using a separate index for them may not be worth the additional time and effort needed to develop it.

Approach for developing and updating a Virginia labor cost index for the SOQ formula

For the COCA modeled in this report, JLARC staff used the CWIFT as the labor cost index. The CWIFT is an experimental comparative wage index created by the National Center for Education Statistics to facilitate comparison of education funding across states and school divisions. It uses U.S. census data to measure regional variations in wages and salaries of college graduates who are not PK–12 educators. The CWIFT is normally indexed to the national average wage, but JLARC staff adjusted the CWIFT values for Virginia school divisions so that they were indexed to the average Virginia school division's cost of labor.

While the CWIFT was a useful tool for JLARC staff analysis, the state should develop its own comparative wage index for use in the SOQ formula. The CWIFT is no longer regularly updated, so the index values are becoming out-of-date and it will soon be of limited use.

Developing a Virginia CWI, based on the CWIFT methodology, would be fairly straightforward. The CWIFT relies on publically available data pulled from the ACS three-year estimates published by the Census Bureau. At least two states, Maryland and Wyoming, have used the CWIFT or similar methodologies to develop new geographic cost indices or updates to existing geographic cost indices for use in their education funding formulas.

The Virginia CWI could be maintained by the Virginia Department of Education (VDOE). However, to initially develop the Virginia CWI, VDOE may need to work with a public or private partner with significant expertise in economics and econometric analysis, such as the Weldon Cooper Center or one of the several education finance researchers who have developed similar CWIs for other states.

To develop the CWI, the analysis team (consisting of VDOE staff and/or the public/private partner) would need to pull the most recent ACS three-year estimates. The analysis team would then need to restrict the sample to workers with characteristics similar to teachers but who do not work in PK–12 education. For example, the CWIFT analysis sample was made up of people who were not self-employed or unpaid workers, were between the age of 18 and 80, worked between 20 and 90 hours, and had at least a bachelor's degree (among other restrictions). Once the analysis team has generated a sample, the analysis team should follow the procedure established by Taylor and Fowler (2006), Imazecki (2016), and Cornman, S.Q., Nixon, L.C., Spence, M.J., and Taylor, L.L., Geverdt, D.E. (2019) and perform a regression analysis using the following equation as a basic template:

$$LnAnnualSalary_i = \beta_w W_i + \beta_0 O_{iy} + \beta_I I_{iy} + \beta_r R_i + \varepsilon_i$$

In this equation:

- the dependent variable is the log of annual salary and/or reported wages,
- W_i is a vector of worker *i* characteristics (such as age, sex, and level of education),

- O_i is an indicator variable for worker i occupation in year y,
- I_i is an indicator variable for worker i industry in year y,
- R_i is an indicator for the region/county/city/labor market a worker i works in, and
- ε_i is an error term.

The research team that developed the CWIFT included a number of interaction and square terms (such as age squared or sex and age) to account for the way wages change as age increases and the varying effect of age on earnings for men and women. The Virginia CWI analysis team should strongly consider using similar terms in the Virginia CWI regression. Virginia has several school divisions that consist of either a partnership between a county and city or a county that provides educational services to independent cities within its borders. In accordance with the CWIFT methodology, the Virginia CWI analysis team should generate a weighted average estimate value for each school division with multiple counties and cities using the share of school age population in each county or city within the school division's boundaries. In creating the CWIFT, the NCES set a minimum of 100 workers per region/labor market. If a county did not have 100 workers within the sample, the research team combined it with neighboring counties until the minimum number of workers was reached. This resulted in many rural counties having the same CWIFT value. The Virginia CWI analysis team should strongly consider following the same process.

Once the Virginia CWI analysis team has generated coefficients, it should use those to predict an average wage in for each city and county in Virginia using the average characteristics of workers in the population. These estimates should then be matched with Virginia school divisions and converted into an index value by dividing each school division's estimated cost of labor by the average school division estimated cost of labor. This index could then be plugged directly into the SOQ formula. A school division with an estimate exactly equal to the average school division's estimated cost of labor would receive an index value of one. Any division with a lower than average cost of labor would have an index value less than one—the state could use this value or follow the JLARC model and truncate the index at one so that no school division receives less funding because of a lower than average cost of labor.

Once the initial index has been calculated, the private/public partner would also need to create detailed materials to explain how the Virginia CWI was calculated and how it can be updated by VDOE staff during the biennial re-benchmarking process.

Alternative methods for estimating the cost of labor

In this appendix, JLARC staff have proposed the state develop a CWI to estimate regional differences in labor costs. CWIs are less likely to confuse high spending districts for high cost districts and overestimate the cost of labor in highly desirable areas than simple cost of living adjustments. While CWIs can be calculated for any type of worker, the proposed approach uses workers with characteristics comparable to teachers, such as similar education, age, experience, etc.

The other most commonly used methodology for adjusting education costs are hedonic wage indices (HWI). HWIs are also regression based analyses but, instead of accounting for just the cost of labor, HWIs also attempt to account for additional factors that can influence the wages paid for educational staff, such as the number of at-risk students in a school or the geographic isolation of the school

division. HWIs can allow for a more "finely tuned" index and can allow for an index to account for more than just cost of labor. However, the general consensus among researchers is that HWIs are much more difficult to update, require much more careful analysis, and have much more extensive data requirements than CWIs. Further, the HWI has a much greater risk of misidentifying higher cost districts than CWIs. As a part of their research, JLARC staff assessed the feasibility of developing an HWI for Virginia. Creating a dataset that could serve as the basis for the HWI would require integrating several data sources from several different agencies and would require extensive effort to develop and update. Based on the difficulties associated with developing an HWI, a CWI-based on the CWIFT methodology would be the best candidate to serve as the replacement for the current COCA.

Appendix M: Small school division economies of scale adjustment

JLARC staff found that the state's funding formula does not purposefully adjust funding to account for smaller school divisions being less able to achieve economies of scale. JLARC staff identified several potential ways that the additional funding needs of small divisions could be accounted for by reviewing other states and talking with national experts on K–12 funding. The most viable approaches identified by JLARC staff are summarized below.

- Develop a separate set of staffing ratios for small school divisions, to be used in the SOQ formula to determine division funding.
- Establish a minimum flat staffing amount for school divisions, in addition to the minimum staffing ratios, to be used in the SOQ formula.
- Adjust the amount of SOQ funding provided to small school divisions, based on division size, using a group approach (e.g., divisions with 1,501 to 2,000 receive an additional 15 percent funding, divisions with 1,001 to 1,500 students receive an additional 20 percent, etc.)
- Adjust the amount of SOQ funding provided to small school divisions, based on division size, using a cost curve approach (described in more detail below)

After considering these options, and discussing them with national experts, JLARC staff determined the best approach would be to adjust funding using a cost curve. Under this approach, a cost curve formula is used to determine how much additional funding, if any, a school division would need based on its size. JLARC staff identified two cost curve formulas that could be used. These formulas were developed by K–12 funding experts who have researched economies of scale in school divisions. One formula was developed by Dr. Bruce Baker and has been applied in several cost adequacy studies performed for other states (Baker & Duncombe 2004; Baker 2005). The other formula was developed by Dr. Lori Taylor (Gronberg, Jansen, Taylor, & Booker 2004). Dr. Taylor's cost curve has also been applied in several cost adequacy studies, including a 2019 study of North Carolina's funding adequacy.

JLARC staff elected to use the cost curve formula developed by Dr. Taylor in the funding models presented in this report (Figure M-1). JLARC staff selected this formula because it also accounted for the effect of "diseconomies of scale," whereby extremely large school divisions begin to experience operational inefficiencies. Although the cost curve was selected for this reason, when applied to Virginia school divisions, JLARC staff found the diseconomies of scale effect was not as large as the economies of scale effect. For example, Fairfax County Public Schools is by far the largest school division in Virginia, with over 175,000 students. The division was estimated to have costs that were 12 percent higher than the most efficient school division in Virginia because of the diseconomies of scale effect. While this is a relatively substantial cost difference, it was not as significant as the 15 to 210 percent cost differences experienced by school divisions with under 2,000 students. Other very large Virginia school divisions, with between 30,000 to 90,000 students, were estimated to have costs that were 1 to 7 percent higher than the most cost efficient school division.

FIGURE M-1
Economies of scale cost formula used in JLARC staff funding models and estimates

Formula fixed inputs
Constant = 1
Division enrollment multiplier = −1.235
Division enrollment, squared multiplier = 0.102
Division enrollment, cubed multiplier = −0.0026

Formula steps
Step 1: Calculate predicted natural logarithm of cost per student for every school division, based on enrollment

*Division predicted log cost = 1 + ln enrollment * -1.235+ ln enrollment² * 0.102+ ln enrollment³ * -0.0026*

Step 2: Find the minimum predicted log cost (this is the most cost efficient school division, based on size)

Sort by division predicted log cost, select minimum amount

Step 3: Calculate difference between minimum predicted log cost and each division's predicted log cost. Because the equation is expressed in logs, this is equivalent to the ratio of a division's predicted cost per student to the minimum cost per student.

Division predicted log difference = Division predicted log cost – Minimum predicted log cost

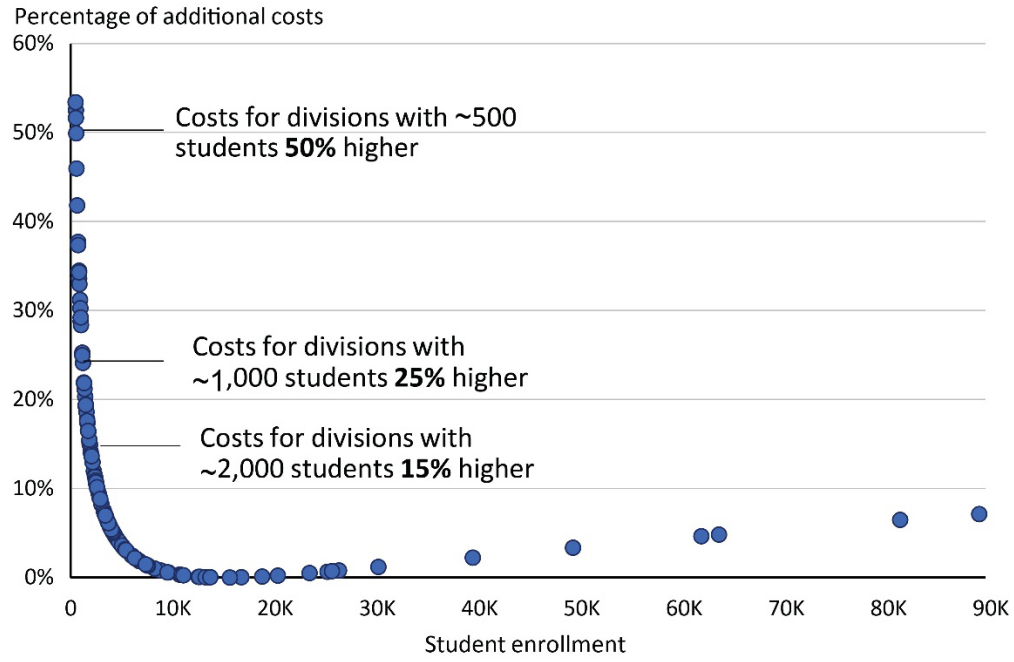
Step 4: Calculate the cost curve index values using the natural exponent

Cost curve index value = $e^{\text{division predicted log difference}}$

An index value of 1.25, for example, would indicate that costs are 25% higher than minimum for a division of the designated size.

SOURCE: Dr. Lori Taylor, Texas A&M University.

FIGURE M-2
Cost per student is substantially higher for divisions with fewer students



SOURCE: JLARC analysis of Virginia enrollment data using economies of scale formula from cost study researchers.
NOTE: Figure shows Virginia school divisions plotted using a formula developed by other cost study researchers. The figure does not show Highland County or Fairfax County Public Schools because their extreme size difference would distort the graphic.

The cost curve formula results in an index value that estimates the additional costs a particular school division incurs based on its size alone, relative to other school divisions. For example, an index value of 1.25 would indicate that costs are 25 percent higher for a division of the designated size, compared with the division that is estimated to have the lowest costs based on its size. The index values can be plotted to show how values vary based on school division size (Figure M-2, previous page).

The index values from the cost curve formula can be used in the SOQ funding formula to adjust the amount of funding a division receives upward. For example, divisions with about 1,000 students are estimated to have 25 percent higher costs per student than the lowest cost division, so 25 percent in additional funding can be provided. The economies of scale adjustment could theoretically be applied to all divisions, but JLARC staff recommended only applying the increase to divisions with fewer than 2,000 students. According to past research, most economies of scale are achieved by the time a division reaches 2,000 students. Looking at the cost curve formula, divisions with 2,000 students have costs about 15 percent higher than the divisions with the lowest cost, and the index values grow much larger and faster for divisions with under 2,000 students.

It appeared reasonable to cap the additional funds for economies of scale at 50 percent to avoid placing potentially unachievable financial obligations on local governments, who must provide the local share of SOQ funding obligations. As calculated for this report, four divisions are above the 50 percent cap (Bath, Craig, Highland, and Lexington). One division is significantly above the cap and has a relatively high local funding obligation (Highland, 211 percent higher cost, 0.7745 local composite index). The cap could be removed with minimal financial implications to the state, but it is not clear if and how this might put a strain on local budgets, especially for Highland County.

Citations:

Balancing District Needs and Student Needs: The Role of Economies of Scale Adjustments and Pupil Need Weights in School Finance Formulas (Baker & Duncombe, 2004)

The emerging shape of educational adequacy: From theoretical assumptions to empirical evidence (Baker, 2005)

School Outcomes and School Costs: The Cost Function Approach (Gronberg, Jansen, Taylor, & Booker, 2004)

Appendix N: Student-based funding formula (Example)

JLARC staff identified two options for replacing all or part of the current SOQ formula with student-based funding calculations: (1) the General Assembly could replace the entire current SOQ formula with a new student-based formula, or (2) the General Assembly could keep the current staffing-based formula for most funding but convert special education and English learner funding to student-based calculations. This appendix describes the student-based formula constructed by JLARC staff, which could be used as a template for a state SOQ student-based formula to replace the current formula. If the state only wants to replace the special education and English learner calculations, it could adopt the more limited approach described at the end of this appendix.

Student-based SOQ formula to replace current staffing-based formula

JLARC staff developed the following methodology for a student-based formula that could be used to replace the current formula and determine SOQ funding obligations in Virginia. The new formula uses financial and student count data that are already available to the Virginia Department of Education (VDOE), with two exceptions noted below.

The new student formula calculates SOQ funding obligations and, as modeled for this report, incorporates JLARC staff recommendations and policy options for improving the current formula (from Chapter 8). The key recommendations and options from the report that are incorporated into the student-based model are as follow.

- Update out-of-date salary cost assumptions during re-benchmarking (Recommendation 5). The new formula adjusts *all* cost assumptions used in the formula to account for inflation that occurs between the end of the data year (in this case end of FY20) and the start of the funding year (in this case start of FY23).
- Calculate prevailing costs using regular average instead of linear weighted average (Policy Option 2). The new formula determines prevailing per pupil amounts using a division average instead of a division linear weighted average, which is a more accurate measure of central tendency for compensation costs that make up the bulk of school division expenditures.
- Replace outdated and inaccurate free lunch measure (Recommendation 7). The new formula assumes that the weighted three-year average Identified Student Percentage (ISP) is used to determine the number of at-risk students eligible for at-risk funding.
- Change Local Composite Index to three-year average (Recommendation 8).The new formula allocates state and local funding obligations by applying a three-year-average Local Composite Index (LCI) based on tax data from 2017, 2018, and 2019, instead of just a one-year LCI based on 2019 tax data.

The student-based formula calculations were made for FY23 only. The data used in the calculations are those that would have been available to VDOE in 2021, during the FY23–24 re-benchmarking process.

In developing the new formula, JLARC staff made some assumptions for the sake of simplicity that the General Assembly may want to change. For example, the formula assumes school divisions re-

ceive the same amount of funding for each special education student, with no variation based on differences in student disability or time spent in the general classroom. The formula adopted by the General Assembly could account for these types of differences.

JLARC staff calculated funding using three slightly different set of assumptions (high, moderate, and low) for the student base amount, which drives most of the funding. Assumptions had to be used because the expenditure codes used in school division annual financial reports do not separate out expenditures for at-risk student or English learner programs from general expenditures. In contrast, there are separate expenditure reporting codes for special education and several other instructional programs. If the General Assembly adopts a student-based formula, VDOE may need to change the Chart of Accounts and annual financial report requirements to begin collecting data on at-risk and English learner program expenditures.

Data Sources for FY23 funding calculation

The student-based formula relied on the following data sources to calculate the amount of funding divisions would have received under the student-based formula for FY23. These data would have been available to VDOE in 2021, when FY23 funding was calculated. The same data and student counts are used in the current SOQ formula, with the exception of student counts used for At-Risk programs, which are the ISP-based student counts recommended in this report.

Annual school division financial reports

- Expenditures data reported for FY20
- Revenues data reported for FY20

Student counts: FY20

- Average daily membership for FY20 (End-of-Year ADM as reported in table 1 of the annual superintendent's reports)
- special education student counts for FY20 (December 1, 2019 SOQ funded responsible special education child count projected forward to FY23 by JLARC staff)
- English learner count for FY20 (all identified receiving or declining services, September 30, 2019)
- Remedial Summer School actual enrollment for FY20 (as reported in RSS projections for the governor's budget 2021)
- At-risk student count for FY20 (April 1, 2020 Identified Student Percentages applied to average daily membership for FY20)

Student counts: Projected FY23

- Projected average daily membership for FY23 (March 31 ADM as reported in DABS for FY23–FY24)
- Projected special education student counts for FY23 (December 1, 2020 SOQ funded responsible special education child count projected forward to FY23 by JLARC staff)

- Projected English learner count for FY23 (all identified receiving or declining services, as reported in ESL projections for the governor's budget 2021)
- Projected Remedial Summer School enrollment for FY23 (as reported in RSS projections for the governor's budget 2021)
- Projected at-risk student count for FY23 (average April 1, 2018-2020 Identified Student Percentages applied to projected average daily membership for FY23)

Local Composite Index (LCI)

- Actual LCI for FY20 (as reported in DABS for FY19–FY20)
- Actual LCI for FY23 (as reported in DABS for FY23–FY24)
- JLARC-calculated three-year average LCI for FY23 (using data from calendar years 2017, 2018 and 2019, instead of just 2019)

VDOE state budget calculations for FY23-FY24

- DABS for FY23-FY24

JLARC staff used additional data to develop assumptions for separating out the student base, at-risk, and English learner expenditures used in the formula. One set of assumptions was based on the relationships between (a) state at-risk funding and total state funding, and (b) state English learner funding and total state funding. These relationships were determined using revenue data from FY12–FY21 and could be updated to reflect more recent changes in state funding. The second set of assumptions were based on the student weightings recommended in education cost studies performed in other states.

Step 1: Calculate total SOQ target amounts

Step 1 determines the expenditures that will be used to determine SOQ funding, called the SOQ target amount, for each school division. First, the formula uses the actual expenditures data reported by divisions to estimate the costs that each division incurs for K–12 operations. This excludes non-K-12 expenditures, capital and debt services, and transfers. To calculate FY23 funding, the expenditures data that would have been available were for FY20. K-12 operating expenditures are then adjusted to remove expenditures related to transportation and food service. Transportation is removed because transportation costs are not strictly student-based. Food service is removed because food service costs can vary widely among divisions and can be funded in very different ways (all/most federal, meal sales, other subsidization).

Second, the formula calculates the total SOQ target amounts for each division. The SOQ target amount is the portion of K–12 operating expenditures that are not covered by (a) federal funds, (b) non-SOQ state funds, and (c) any non-SOQ required local matching funds. However, in JLARC staff's model, state funding and local matches for two non-SOQ programs were *not* removed: the Compensation Supplement and At-Risk Add-On. Funding for these program were treated as SOQ funding because (a) the Compensation Supplement funding is ultimately rolled into SOQ and the report's recommends adjust salaries (similar to what the Compensation Supplement does) and, (b)

the report recommends making the At-Risk Add-On program SOQ-required. To calculate FY23 funding, the formula uses revenues data reported by divisions for FY20. For partner divisions—Fairfax County and Fairfax City, Greensville and Emporia, and Williamsburg and James City—expenditures and revenues to be removed were merged together for this calculation.

Third, the formula adjusts the SOQ target amounts for each division for inflation from the FY20 data year to the FY23 funding year using inflation factors similar to those used in the SOQ formula (used the average capped inflation factor of 1.047 for non-personal costs) and JLARC's recommended salary cost adjustment (used a 1.144 inflation factor, based on change in CPI-U, for personal costs; this is the one data point used in this calculation that would not have been fully available to VDOE at the time because the last few months of FY22 would have needed to be projected).

STEP 2: Calculate prevailing student base and instructional program per pupil amounts (PPAs)

Step 2 calculates the prevailing PPA for each division in seven SOQ accounts: Student Base, At-Risk, English Learners, Special Education, Career and Technical Education (CTE), Gifted Education, and Remedial Summer School (RSS). An eighth SOQ account, transportation, is calculated separately under the formula that the state currently uses. This new SOQ account structure is significantly different than the current structure in two ways. First, while the new Student Base account includes most of what is now Basic Aid funding, funding for English learners and transportation are moved to their own accounts and some health-care costs are removed and distributed across the other programs. Second, all costs associated with each student-based program are moved into that program, and separate accounts for VRS Retirement, Group Life, and Social Security are eliminated. For example, the current special education program includes only funding for special education teachers and aides. The new special education program would include those costs as well as all related benefits and payroll taxes and non-personal expenses. This approach more closely reflects how expenditures for programs are actually reported. The account changes are summarized in Table N-1 (next page).

Step 2 is broken down into two parts because there is no expenditure data for at-risk and English learner programs. If these data were available, the calculation would be much simpler.

Step 2A: Calculate prevailing PPA for Special Education, CTE, Gifted Education, and RSS

The state collects expenditure data on these four instructional programs. Using the expenditure data for each program within each division, adjusted using the same approach employed in Step 1, the student-based formula calculates a program target amount. The FY20 target amount for each program and division are then converted into program PPAs for each division, based on the appropriate FY20 student counts. The program PPAs are then adjusted for inflation to the start of FY23 using the same inflation factors used in Step 1. The formula then calculates the prevailing PPA for each program using a division average. For example, it would look at what each division spent per special education student and calculate the average division expenditure per special education student.

TABLE N-1
Current and potential new accounts under a student-based formula

Current SOQ account	New SOQ account (under student-based formula)
Basic Aid	Base Foundation *(Note: the compensation costs that were captured under these programs for teachers and aides in other programs, e.g., VRS retirement funds for special education teachers, are now moved into those programs. Transportation, which was under Basic Aid, is moved to its own account below.)*
Sales Tax	
VRS Retirement	
Social Security	
Group Life	
Textbooks	
Prevention, Intervention, Remediation	At-Risk Program
Special Education	Special Education
English as a Second Language	English Language Learner Program
Vocational Education	Career and Technical Education
Gifted Education	Gifted Education
Remedial Summer School	Remedial Summer School
	Transportation

SOURCE: 2022 appropriation act for FY23-FY24 (Chapter 2).

Step 2B: Calculate prevailing per pupil amounts for Student Base, At-Risk, and EL

For each division, the model takes the total inflation-adjusted SOQ target amounts (from Step 1) and subtracts the inflation-adjusted program target amounts (from Step 2A) to calculate the remaining, combined target amount for Student Base, At-Risk, and English Language Learners. The state does not currently collect expenditure data on at-risk and English learner instructional programs, so spending for these programs is intermingled with base spending for other instructional and student support services. Because the expenditures are intermingled, they cannot be separated unless some assumptions are made. The formula calculates Student Base in three ways, using three different assumptions. Ultimately, JLARC staff determined the middle assumption appeared most realistic, and the calculations from this assumption are what is presented in this report.

- High Student Base assumption. Under this calculation, the formula assumes total at-risk and EL expenditures were equivalent to the proportion of state at-risk and EL funding relative to all state funding. Using data from FY17–FY21, this results in a weight of 0.24 per At-Risk student (measured by Identified Student Percentage) and 0.13 per EL student (measured using all identified EL students receiving services).
- Middle Student Base Assumption. Under this calculation, the formula assumes actual at-risk and EL spending is equivalent to the mid-point of the high- and low-base assumptions. These weights were 0.295 per at-risk student (as measured by ISP) and 0.265 per EL student.

- Low Student Base assumption. Under this calculation, the formula assumes actual at-risk and EL spending is equivalent to the benchmarks weights from JLARC staff's review of cost studies performed in other states. These weights were 0.35 per at-risk student (as measured by ISP) and 0.40 per EL student.

Under each set of assumptions, the formula calculates what the Student Base PPA would be for each division. The formula then calculates the prevailing PPA for Student Base using a division average. Also under each set of assumptions, the formula calculates what the EL PPA would be for each division. The formula then calculates the prevailing PPA for EL using a division average.

The At-Risk PPA for each division was not calculated using the assumptions. Instead, the At-Risk PPA for each division was calculated using the new At-Risk program formula recommended in Chapter 8 (Recommendation 10) and described in Appendix J. The calculation provides 60 percent of funding to at-risk students under a flat rate of 17.5 percent per at risk-student, and 40 percent under a variable concentration of poverty rate that ranges from 11 percent to 19.45 percent per at-risk student. The combined effective rate of the flat and variable rates is 28.71 percent, which is slightly above the rate used in the middle assumption.

STEP 3: Adjust PPAs for cost of labor and division size

Step 3 separately adjusts each division's PPAs for cost of labor and division size (economies of scale). Each adjustment is calculated using the prevailing PPAs for each division (or, for the At-Risk program, the specific PPA calculated for each division). The separately calculated cost of labor and division size adjustment amounts are then added on to the unadjusted PPA amounts to calculate the total adjusted PPA amounts. This approach is used to avoid unintentionally magnifying the effect of the labor cost and size adjustments by applying one adjustment after the other has been made. The adjustments and approach used in the student-based formula are the same as those recommended in Chapter 8 and used in JLARC's model of changes to the existing staffing based formula.

Cost of labor adjustments are made only for school divisions that have above average labor costs according to the cost of labor index used in this study (see Appendix L). For these divisions, the cost of labor adjustment is calculated by taking the percentage of division expenditures that were for labor cost (pay, benefits, payroll taxes), multiplying the PPA by that percentage, and multiplying that by the division's cost of labor index score. This results in a labor cost adjustment unique to each division and PPA. The adjustment increases funding only for divisions with above average labor costs; it does not remove funding for divisions with below average costs.

Division size adjustments are made only for school divisions with fewer than 2,000 students. Adjustments are made using a cost-curve calculation for economies of scale in school divisions. This cost curve was developed by education funding researchers (see Appendix M). The cost curve calculates a size-based estimate of each division's expected costs, ranging from about 15 percent additional costs to over 200 percent. However, the economies of scale adjustment used in the formula is capped at a 50 percent increase above the unadjusted PPA. For eligible divisions, the size adjustment is calculated by taking the PPAs for each division and multiplying them by its cost-curve score.

Once both the cost of labor and division size calculations are complete, each adjustment is added to each PPA for each division.

STEP 4: Calculate total SOQ funding obligation for each division

Step 4 calculates total funding obligations for each school division by taking the PPAs and multiplying them by the matching student count projected for the funding year. For Student Base, CTE, Gifted Education, and RSS, the PPA is multiplied by each division's *total* projected FY23 student enrollment, using March 31 average daily membership. For Special Education, the PPA is multiplied by the FY23 projected number of special education students the division is responsible for, using December 1 child counts. (This is the only student projection developed by JLARC; other student projections are based on those actually developed and used by VDOE in the SOQ funding formula.) For English Learners, the PPA is multiplied by the projected FY23 number of identified English learners. For At-Risk, the PPA is multiplied by the projected FY23 number of at-risk students, which is determined using a three-year average of each division's ISP applied to VDOE's total projected FY23 student enrollment.

The transportation lump sum SOQ amounts (deducted under Step 1) are added back in as an eighth, additional separate SOQ account. (Food service is not added back in because it is not funded through SOQs.)

STEP 5: Calculate state and local shares

Step 5 calculates state and local SOQ funding shares for each division by applying a three-year-average LCI for FY18–FY20. This is the same approach recommended for the current staffing-based formula in Chapter 8. The funding amounts calculated by the formula, by account, are shown below (Table N-2). When looking at the change in program funding, it is important to understand that the student-based formula moves all funding for costs associated with each student-based program into that program, and the separate accounts for VRS Retirement, Group Life, and Social Security are eliminated. For example, the current special education program includes only funding for special education teachers and aides. The new student-based special education program would include those costs as well as all related benefits and payroll taxes and non-personal expenses. This approach more closely reflects how expenditures for programs are actually made and reported. The effect in Table L-1 is to make it look like less student base funding is being provided, when in fact the new formula is just more accurately accounting for the base and other program funds.

JLARC staff also calculated what total state funding for each division would have been under the change in FY23 by adding in non-SOQ funds. This data is not presented here as the net effect of the change is the same.

TABLE N-2
JLARC student-based formula state funding amounts

	Student-based formula	FY23 budget actual (2022 Appropriation Act)	Change
Student base	$5,900M	$6,130M (includes SOQ accounts for Basic Aid less transportation, Textbooks, VRS Retirement, Social Security, and Group Life; includes non-SOQ funding from the Compensation Supplement) [a]	−$230M (Funding goes down in this account because some of the staffing costs captured under other accounts, such as health insurance under Basic Aid and retirement benefits under VRS Retirement, are shifted to program accounts, such as special education)
At-Risk programs	$750M	$460M (includes SOQ account for Prevention, Intervention, Remediation; includes non-SOQ At-Risk Add-On program)	+$290M (At least ~$50 million of increase is from benefits and payroll costs being shifted here from other accounts)
Special education	$1,150M	$430M	+$720M (At least ~$160 million of increase is from benefits and payroll costs being shifted here from other accounts)
English learner programs	$150M	$100M	+$50M
Career & technical education	$350M	$70M	+$280M (Significant portion of increase is from benefits and payroll costs being shifted here from other accounts)
Gifted education	$110M	$40M	+$70M (Significant portion of increase is from benefits and payroll costs being shifted here from other accounts)
Remedial summer school	$ 8M	$23M	−$15M
Transportation	$420M	$420M (from SOQ Basic Aid account)	$0
Total	**$8,840M**	**$7,675M**	**+$1,165M**

SOURCE: JLARC student-based funding model calculations compared to 2022 appropriation act.
NOTE: Funding amounts shown here are based on the Middle Student Base assumption, discussed earlier in this appendix.

Student-based calculations for special education and English learners only

An alternative to replacing the entire current SOQ formula is to only replace how funding is calculated for special education and English learners. Funding for these students could be converted to student-based calculations, similar to what the report recommends for at-risk student funding, while the rest of the formula remains based on staffing ratios. Replacing the current special education calculation with a student-based calculation would eliminate the need to perform more research into special education staffing needs, and funding for this critical area could be more readily increased. Replacing the English learner calculation with a student-based calculation would better recognize the many additional costs that these students incur. However, to most accurately estimate funding needs for English learners, the state would need to begin collecting data on English learner expenditures in its annual financial reports from school divisions.

Under the approach developed by JLARC staff, the current staffing-based special education and English learner calculations would be eliminated, including the salary calculations performed for the current Special Education and English as a Second Language SOQ accounts and the benefits and payroll calculations associated with special education positions in the Basic Aid (for health insurance), VRS Retirement, Social Security, and Group Life SOQ accounts.

Student-based calculation steps

The new Special Education and English Learner SOQ program funds would be calculated as follows. JLARC staff have developed a simple calculator tool that performs these calculations.

First, a student base per pupil amount is calculated for each division by adding the division's per pupil amounts for Basic Aid, VRS Retirement, Social Security, and Group Life *less* costs related to special education teachers and aides and less transportation costs. (Unlike special education, the benefits and payroll taxes associated with English learner teachers are actually accounted for in the main account itself so do not need to be removed from these other accounts.)

Second, a student weight is assigned for special education and English learner students. The special education weight was based on the ratio of special education expenditures to base student expenditures, which JLARC staff estimated to be 1.68. The English learner weight was 0.293, which was the midpoint between the average English learner weight recommended by other state cost studies and the actual ratio of state EL funding to all state funding. Both ratios were adjusted to account for the fact that the ratio is being applied to a base per pupil amount that is lower than actual or recommended amounts and approximate the calculations performed in JLARC's full student-based model.

Third, the amount of SOQ funding for each division was calculated by multiplying the student weight by the PPA amount by the number of qualifying students, for both special education and English learners. For special education, the student count used was the same SOQ funded responsible count that is used in the actual SOQ calculations. For English learners, the student count was the same EL identified count used in the actual calculations.

Fourth, the total funding obligation for each division was determined by applying a three-year-average LCI for FY18–FY20. This is the same approach recommended for the current staffing-based formula in Chapter 8. The funding amounts calculated by the formula, by account, are shown below

(Table N-3). The new special education and English learner funding amounts are compared to current staffing-based funding. Note that implementing these student-based calculations would shift some funding out of Basic Aid and the benefit and payroll SOQ accounts. These shifts are accounted for in the table.

TABLE N-3
JLARC student-based special education and English learner funding amounts

	State share of SOQ obligations only		
	New student-based calculation amount	**Current program amount**	**Estimated net change**
Special education	$1,070M	$590M ($430M special education SOQ account, at least $160 M in related funding under other SOQ accounts)[a]	+ $480M
English learners	$140M	$100M	+ $35M
Total	**$1,210M**	**$690M**	**+ $520M**

SOURCE: JLARC student-based funding calculations.

[a] The current SOQ accounts for Special education and English as a Second Language only capture the cost of salaries for special education teachers and aides and English learner teachers. They do not capture any other costs related to these programs. JLARC staff were able to calculate the benefits and payroll costs associated with employee salaries, including health-care insurance (under Basic Aid), VRS Retirement, Social Security, and Group Life insurance. These additional costs are included here to provide the most accurate comparison possible.