Journal of Research in Rural Education, Winter, 1997, Vol. 13, No. 3, 170-182

An Economical, Thorough, and Efficient School System: The West Virginia School Building Authority "Economy of Scale" Numbers

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In the past decade, West Virginia has funded a massive school building program. A one-page "economy of scale" guideline has driven the entire process. The guideline, developed ex nihilo by the state funding agency, specifies school sizes required for bond-financed funding. I argue that the one-size-fits-all school size requirements are inappropriately large for much of West Virginia. These ostensibly objective guidelines have forced expensive and unnecessary school consolidation throughout sparsely populated areas. This forced consolidation is especially detrimental to the education of the poorest and most rural students.

The West Virginia School Building Authority (SBA) was created by the legislature in 1989 at the behest of Governor Caperton to carry out a mandate of the Recht Decision.[1] The Recht Decision comprises the Opinion, Findings of Fact, Conclusions of Law and Orders in West Virginia's major education reform case, which found the West Virginia school financing system to be largely unconstitutional. The Recht court ordered a high quality education system to be put in place and financed "at the earliest practicable time" (*Pauley v. Bailey*, March 4, 1983, p. 5). The court, however, left implementation of its order up to the legislature, the state superintendent of schools, and the state board of education. They have carried out very little of the court-mandated program. The one major piece of the Recht Decision that has been implemented is state-wide facility financing through the SBA. The SBA was created to sell bonds and distribute the money raised to county school boards based on need for school building and maintenance. In this manner, school facility needs were to get equal attention whether they occurred in a poor county or a rich one.

The statute empowering the SBA set out seven criteria, or goals, that the agency should use to judge county facility plans for funding: student health and safety, economies of scale, reasonable travel time, multicounty and regional planning, curricular improvement, innovations in education, and adequate space for projected student enrollments (W. Va. Code § 18-9D-16, 1994). Since its inception, however, the SBA has emphasized economies of scale over the other criteria. This has been accomplished in two ways: first, by arbitrarily interpreting economies of scale as *required* school sizes; and second, by weighting the economy of scale factor when evaluating projects.

As one of its initial acts, the SBA generated a one-page Economies of Scale regulation (SBA, 1995). This document does not actually discuss or refer to economies of scale at all, but instead sets minimum student enrollment requirements "needed for a school to be eligible for SBA funding" for new buildings or additions or major improvements for existing schools (SBA, 1995).

The minimum required student enrollments to meet SBA guidelines for economies of scale are

Kindergarten:	2 classes of 20 students
Grades 1-8:	2 classes of 25 students per grade level
Grades 5-9:	150 students per grade level
Grades 10-12:	200 students per grade level

These numbers produce basic required school sizes of

K-8 grade school:	440 students
5-8 middle school:	600 students
9-12 high school:	750 students

Although the document title says that these school sizes are required to "meet . . . guidelines for economies of scale," there are no separate or additional economy of scale guidelines. These required school sizes *are* the economy of scale guidelines.

A version of this article appeared in *West Virginia Law Review, 99,* 175-206.

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[1] *Pauley v. Bailey*, No. 75-1268, Order (Cir. Ct. of Kanawha Co., May 11, 1982) [hereinafter Recht Decision] (and supplemental opinions of May 21, 1982, and September 1, 1982, and final order of March 4, 1983).

Compared to existing West Virginia schools sizes, these required school sizes were very large. In 1992, after 75 small schools had been closed, 61% of West Virginia schools were still too small to be eligible for SBA funding according to the economy of scale numbers (F & A Statistics Division, 1991; Purdy, 1992). Existing schools were generally smaller than these SBA-required school sizes because the SBA requirements fail to factor in the population scarcity of much of this rural state. Pocahontas County, for example, has only one 488-student high school because that is all the high school students there are in the county's 943 square miles (West Virginia Department of Education, 1996a). Sparsely populated counties must gather widely scattered students from much larger geographic areas—the larger the school, the larger the area—with attendant increases in transportation cost and students' time on school buses (Alexander, 1990). In other words, inappropriately sized schools may suffer from diseconomies of scale (Fox, 1980). To some extent, existing school sizes reflected geographic and demographic realities; the SBA school size requirements ignored them in favor of a one-size-fits-all formula.

The SBA evaluates county facility plans in order to award funding, using a scale of one to nine to measure how well a plan meets each statutory goal. Without legislative mandate, however, the authority has also weighted these goals (SBA, 1995, p. 84). Economy of scale numbers have a 1.5 weight, so plans that meet the required school sizes get "extra credit." Factors presumed to accompany larger school size, such as improved curriculum, also have a 1.5 weighting. Student transportation time, which suffers with larger school size, has only a 1.0 weighting. SBA funding is a highly competitive race for tens of millions of dollars. These weighted goals ensure that larger schools will get higher rankings to secure funding, which means that only larger schools will be built or have major maintenance, whether or not they are more economical.

This article concludes that the so-called "economy of scale" numbers are actually arbitrary and uneconomical requirements for large-sized schools—requirements that are neither mandated nor supported by the law—and that West Virginia should abandon them. To reach that conclusion, I examine educational finance research on true economies and diseconomies of scale. Further, I review research on the detrimental educational effects of large schools on poor children and on children who suffer long travel times (in rural areas these are often the same children).[2] Finally, I consider the constitutional mandate that West Virginia's school system be thorough and efficient, where I find that SBA large school requirements, disguised as purported economy of scale numbers, comport with neither of those directives.

Context in Which the SBA was Created

Pauley v. Kelly, the Recht Decision, and the Master Plan

The West Virginia Constitution requires that "the legislature shall provide, by general law, for a thorough and efficient system of free schools" (W. Va. CONST. art. XII, § 1). In 1975, the parents of five Lincoln County schoolchildren filed a declaratory judgment action alleging that the method of financing public schools denied them a thorough and efficient education and equal protection of the law (*Pauley v. Kelly*, 1979, p. 859). The Kanawha County Circuit Court dismissed the action, and plaintiffs appealed. In a far-reaching decision, the West Virginia Supreme Court of Appeals (Supreme Court) examined "thorough and efficient" clauses in state constitutions throughout the country to arrive at its own definition:

> A thorough and efficient system of schools . . . develops, as best the state of education expertise allows, the minds, bodies and social morality of its charges to prepare them for useful and happy occupations, recreation and citizenship, and does so economically. (*Pauley v. Kelly*, 1979, p. 877)

The court is thus clear that the first constitutional requirement is a high quality education system. Economy, while not exactly an afterthought, is still secondary or subordinate to thoroughness.

Because the State constitution requires a thorough and efficient system of schools, education is a fundamental constitutional right in West Virginia (*Pauley v. Kelley*, 1979, p. 878). As a constitutionally derived right, education thrusts a strict scrutiny equal protection standard upon the State. No discriminatory classification found in the educational financing system can stand unless the State can demonstrate some compelling State interest to justify the unequal classification (*Cimino v. Board of Education of County of Marion, W. Va.*, 1974; *Piccirillo v. City of Follansbee, W. Va.*, 1977).

Although the Supreme Court was clear about these constitutional principles, when the Court turned to the constitutionality of the State funding formula, it found that that issue could not be resolved or even addressed on the record from the *Pauley* court because the Thorough and Efficient

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[2]These forced diseconomies and negative educational outcomes raise equal protection issues for sparsely populated rural counties and poor children across the state. Full consideration of equal protection issues is beyond the scope of this article; however, the disproportionate impact of "economy of scale" numbers on poor, rural children and sparsely populated counties documented here establishes the factual premise of an equal protection argument.

Clause requires the development of high quality educational standards *(Pauley v. Kelley*, 1979, p. 878). Without such standards the court could not determine whether the existing system had failed, much less "whether this failure [is] a result of inefficiency and failure to follow existing school statutes" (*Pauley v. Kelley*, 1979, p. 878).

The Supreme Court remanded the case to Kanawha County Circuit Court and appointed the Honorable Arthur Recht to consider these questions. Forty days of testimony produced the Opinion, Findings of Fact, Conclusions of Law and Orders that came to be known as the "Recht Decision." This Decision set detailed standards for every area of education. Numerous aspects of the state education support plan were found to be unconstitutional *per se* and discriminatory. The Recht Decision concluded by appointing a commissioner to oversee development of a master plan to implement the Decision. On September 1, 1982, the Court ordered that, since the State Superintendent of Schools and the State Board of Education had abandoned any appeal of the Recht Decision, they be allowed to form a responsible committee to develop the Master Plan. Many have alleged that thus was the fox put back in charge of the henhouse. However, the Court did retain jurisdiction to oversee implementation of the Master Plan.

The Recht Decision and the Master Plan are both extremely detailed documents (down to requiring maracas in music rooms and setting the square footage of a library browsing area). Both are also input-oriented (Howley, 1996) and require many things: teachers, programs, buildings, books, musical instruments, and playing fields. The SBA's first defense of its large school building and consolidation program is always that it is carrying out these directives.

The educational standards of the Recht Decision are not, however, "necessarily those which should be included in the master plan to be developed pursuant to this opinion" (Recht Decision, May 21, 1982, p. 8). Judge Recht said,

> [T]his Court cannot and does not have the power—authority—or jurisdiction to DEMAND that the West Virginia Legislature adopt this particular plan or for that matter, any single piece of legislation—to do so would violate the traditional concepts of the separation of power—specific legislation is exclusively a legislature function. (Recht Decision, May 21, 1982, p. 9)

Similarly, when the 99-member committee finished its 356-page Master Plan in 1983, Judge Recht noted that it was only "an aid to the Legislature . . . [and] not intended to intrude upon any legislative prerogative" (Recht Decision, March 4, 1983, p. 2).

What authority, if any, the specific educational requirements of the Master Plan retain is unclear. The plan was based on recommendations that were the "best the state of education expertise allow[ed]"—in 1983 (*Pauley v. Kelly*, 1979, p. 877). The plan was to be updated every 4 years (West Virginia Board of Education, 1983, p. 10). The plan has never been updated, nor is a time frame in place for implementation,[3] although the Court's final order required that "a thorough and efficient system of free public schools [be] available at the earliest practicable time" (Recht Decision, March 4, 1983, p. 5).

The Recht Decision's conclusions of law clearly retain their validity; none has been overturned, or even questioned. "Equal protection," the Court found, "requires equality in substantive educational offerings and results" (*Pauley v. Kelly*, n. 7). But Recht is clear that the state's legal duty to provide equal educational opportunities does not mean providing identical resources or one-size-fits-all plans. Equal does not mean identical. Resources must be allocated according to needs and costs, and all factors contributing to differences in needs and costs "must be incorporated into the financing structure" (Recht Decision, May 11, 1982, pp. 217-218). In particular, Judge Recht recognizes that there are unequal costs and greater need due to isolation, population scarcity, terrain, road conditions, and resulting small school size.

Rural West Virginia: Poverty, Scarcity, and Difficult Geography

The conditions Judge Recht recognized still affect a majority of West Virginia counties and county school systems in 1996. West Virginia is a rural state, the second most sparsely populated state in the east (West Virginia Department of Education, March 1989). The majority of its children, 70%, are enrolled in rural and small town schools (Howley, 1996, p. 187). Of its 55 counties, 27 have fewer than ten students per square mile (Margolin, 1996). The remaining 28 counties, by comparison, have an average of 25 students per square mile (Margolin, 1996).

The sparsely populated counties are poorer. Sixty percent of their students are eligible for free and reduced lunch, compared to 45% of students in more densely populated counties (West Virginia Department of Education, 1995). A landmark study by the West Virginia Department of Education in 1989 found that sparsely populated counties had substantially higher unemployment, lower per capita income, larger numbers of special education students, fewer gifted students, and fewer adults with a high school education (West Virginia Department of Education, 1989, pp. 4-18). These disparities have not changed, but in 1989 only 25 counties were sparsely populated (West Virginia De-

[3]In the re-opened *Pauley* case, now styled *Tomblin v. Gainer*, plaintiffs ask for a timetable for implementation of the Master Plan, particularly regarding financing.

partment of Education, 1989, pp. 4-18); now 27 are (Margolin, 1996, T-21).

The sparsely populated counties have greater difficulty supporting their schools. In the past 5 years, some counties have ended the year with budget deficits; 81% of those counties were rural (West Virginia Department of Education, 1996b). For fiscal year 1995, 15 of the 16 counties without an excess levy were sparsely populated (Margolin, 1996, p. 14). As a further conclusion of law, Judge Recht found that

> the present system allocates funds according to factors such as the amount of a county's property wealth and its ability to pass excess and bond levies. These factors bear no relation to educational needs and costs of substantive educational offerings and results. (Recht Decision, May 11, 1982, p. 220)

To meet constitutional standards, Recht required eliminating county excess levies and using needs-based rather than per-pupil funding. Neither crucial change has been adopted, but funding per pupil has been reduced.

Ironically, the most important item of the Recht Decision that has been adopted, the state-supported facilities funding program or SBA, requires rural counties (through application of SBA economy of scale numbers) to build schools that are inappropriately sized for their population scarcity, terrain, and road conditions. Additionally, the poverty of the rural counties creates special educational needs that are best met in smaller schools (See discussion part VI. A). The one-size-fits-all school size requirement ignores these special needs and special costs, which, according to the Recht Decision, it is the state's legal duty to consider (Recht Decision, May 11, 1982, p. 217).

The SBA and the 10-Year School Building Plan

In 1989, by request of the executive, the Legislature created the SBA to "provide state funds for the construction and maintenance of school facilities so as to meet the educational needs of the people of this state in an efficient and economical manner" (W. Va. CODE § 18-9D-15, 1994). The funds available to the authority were to be used as follows: (a) 3% for statewide projects; (b) 50% of the remaining funds to each county based on net enrollment; and (c) 50% of the remaining funds allocated on the basis of "need and efficient use of resources, such basis to be determined by the authority in accordance with the provisions of section sixteen of this article.[4]

Section 16 sets out the criteria by which facility plans and need-based eligibility are to be judged. The legislature originally set seven goals that county facility plans were to address:

(1) student health and safety;
(2) economies of scale, including compatibility with similar schools that have achieved the most economical organization, facility utilization and pupil-teacher ratios;
(3) reasonable travel time and practical means of addressing other demographic considerations;
(4) multicounty and regional planning to achieve the most effective and efficient instructional delivery system;
(5) curricular improvement and diversification, including computerization and technology and advanced senior courses in science, mathematics, language arts and social studies;
(6) innovations in education such as year-round schools and community-based programs; and
(7) adequate space for projected student enrollments. (W. Va. CODE § 18-9D-16(d), 1994)

Creation of the SBA caused excitement, even jubilation, among school administrators and school board members who, in too many cases, had old buildings, ongoing maintenance needs, and no local building funds at all. The potential availability of tens of millions of dollars incited a flurry of planning, and this planning was based on the initial substantive act of the SBA: creation of the "economy of scale" minimum required school sizes.

Creation of the SBA was the first step in the state's 10-year school building plan, according to a speech Governor Caperton gave at the National Conference on Educational Facilities ("Caperton Talks," 1991). The 10-year plan was to close 245 schools by the year 2000.[5] It would cost $1.2 billion, save $307 million through repair and renovation and save $47 million a year in maintenance and personnel.

That the governor's school *building* plan involved *closing* 245 schools was a clue to the policy direction the SBA would take.[6] The immediate issuance of economy of scale numbers cemented the deal. When the economy of scale numbers were issued in 1989, only 34% of existing schools in West Virginia were eligible for SBA funding based on

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[4]The "needs" projects are the major building projects, usually new buildings. Because the SBA has required counties to apply their available "net enrollment" money to these projects also, the needs projects (73 schools) have commandeered 79% of the $505,838,965 the SBA has made available, leaving only 18% of the money for the remaining 90% of the state schools.

[5]Actually the SBA program closed 258 schools, that is more than 25% of the state schools, by 1994, 6 years ahead of schedule ("Caperton Talks," 1991).

[6]Another clue was that the governor's choice for state superintendent of schools had successfully closed small schools in Ohio County when he was county school superintendent (Hughes, 1991).

these size requirements (F & A Statistics Division, 1991, p. 13). For counties to build schools that would be large enough to be eligible for SBA funds, other schools—smaller schools—would have to close. There was no need, therefore, for the governor or any policymakers to urge "consolidation" because the only way to reach the economy of scale required enrollment numbers would be for some schools to close and merge. In fact, predominately smaller and largely rural schools closed and their students merged into existing student bodies (Howley, 1996, p. 210). Through application of the one-page economy of scale regulation, a school building program automatically became a school closing and consolidation program. Building large schools had a political plus—job creation. The 1993 SBA presentation to the West Virginia legislature contained seven pages of charts and graphs showing full-time jobs, projected job years created, SBA impact on West Virginia's economy, increased tax revenue, and more (SBA, 1993).

Economies of Scale

Bigger Isn't Necessarily Cheaper

In the SBA statute, one of eight facility planning goals reads as follows:

> (2) Economies of scale, including compatibility with similar schools that have achieved the most economical organization, facility utilization and pupil-teacher ratios. (W. Va. CODE § 18-9D-16(d)(2), 1994)

Use of the term "economies of scale" in the statute incorporates an assumption that larger schools will be cheaper schools. The notion that a larger factory will produce cheaper widgets is commonsensical, perhaps, but the analogy between a widget factory and a school as "producers" is weak (Fox, 1980). For services, such as education, the input/output relationship is difficult to define (Fox, 1980), and output measures should consider not just the number of students "processed," but also if and how well they are educated.

Nevertheless, in the 1960s and 70s researchers, ignoring educational outcomes and costs outside of the school building, sought the "most economical school size" (Fox, 1980). A review of 30 such studies finds the answers range from 100 to 1800 students (Fox, 1980); where optimum schools sizes were smaller, the analysis was based on rural schools. The same studies consistently found diseconomies in schools both larger and smaller than their optimum.

"Economies of scale" is thus a more complex notion than just bigger is cheaper. Such size-economies research typically presumes that external costs do not change with school size, but, in fact, school consolidation enlarges the geographic area from which students are drawn, increasing transportation expenses or travel times, or both, particularly for more sparsely populated areas (Fox, 1980). Capital costs are an additional factor in economy equations when new buildings are constructed, and may offset any potential operating cost savings (Fox, 1980). Other potential diseconomies of larger consolidated schools include: diminished school bond or levy support, increased salaries for more specialized staff to offer promised improved curricula, higher rates of vandalism (Streifel, Foldesy, & Holman, 1991), higher insurance costs, and larger physical plants to maintain (Valencia, 1984).

No magic number is *the* school size for the most economical organization. Further, as the research reviewed above suggests, population scarcity is a crucial factor in determining what size school will be most efficient *in a particular geographic and demographic setting*. The statutory language is very open-ended, inviting this kind of contingent analysis: "Compatibility with similar schools that have achieved the most economical organization, facility utilization and pupil-teacher ratios." Weighed equally with the other six goals, it should help balance effectiveness with economy.

West Virginia Economy of Scale Numbers

The SBA economy of scale numbers take none of this complexity into account. They are simply based on current statutory class-size requirements. Clacy Williams, Executive Director of the SBA, testified that the West Virginia Code requires "construction of school facilities using efficiencies, [and] [w]e have identified that efficiency as being primarily in relationship to the size of the school" (*Pendleton Citizens v. Marockie*, April 12, 1996). Williams says, "There's a statute that requires that elementary grades 1 through 6 not exceed 25 students per classroom, so we figured if that's good enough for elementary school, that probably we should carry that forward" (*Pendleton Citizens v. Marockie*, April 12, 1996, pp. 107-108). However, minimum school-size requirements do not just "carry that forward," but instead require 150 students per grade in middle school and 200 students per grade in high school (SBA, 1996). The SBA has never offered any explanation of the middle and high school "economy of scale" minimum school-size requirements. Had the authority looked at available research they would have found that "[s]chool closures in most cases mean only slight savings because 75-85% of a school budget is for personnel costs, which are usually only slightly affected, if at all, by closures (Valencia, 1984). West Virginia, which has closed more than 25% of its schools since 1990, had virtually the same pupil-teacher ratio in 1995 as in 1990, indicating that no teaching positions have been eliminated and no appreciable

savings have been realized in professional personnel by these closures.

Teachers are expensive, so the fewer required, the cheaper the school. Improved student learning with lower pupil-teacher ratios suggests this is not always a wise economy, but the state per-pupil funding formula has made it necessary.[7] However, the 25 pupil limit on class sizes already guarantees this economy (W. Va. Code § 18-5-18(a), 1994). Teachers may have up to 3 additional students (up to 28) for which they are paid per pupil. Then an additional teacher must be hired. (For grades 1 through 3, additional pupils above 25 per class have been phased out so that, as of 1996, no additional pupils are allowable in these classrooms.) Having two classes of 25 per grade instead of one actually gives the administration only 3 "extra" students to shuffle around before another teacher is required. So if economy of scale numbers are based on pupil-teacher ratios, the numbers might as well have required schools with one 25-student class per grade, with very little loss of efficiency, or three classes per grade, with very little gain.

An arbitrary rule is one selected at random rather than based on reason. The two class per grade school-size requirement, having no demonstrable relation to economy or savings, is arbitrary. The requirements for 150 students per grade for grades 5 through 9 and 200 students per grade for grades 10 through 12, having no proffered reasonable bases at all, are similarly arbitrary. To enact an arbitrary rule is to act capriciously, without reason, at random. The SBA has acted arbitrarily and capriciously in creating and imposing the economy of scale required school sizes.

Economies of Scale and the Seven Other Goals

The SBA treats economy of scale as the most important goal, although it systematically denies that it does so. When asked by Judge Kaufman during a hearing in the Pendleton County consolidation case whether the size of the school bears on the funding, Clacy Williams, SBA Executive Director replied, under oath, "It's a very small issue" (*Pendleton Citizens v. Marockie*, April 12, 1996). Judge Kaufman spends the next eight transcript pages trying to understand why, in that case, the SBA would not just let Pendleton County spend the same amount of money to be used on the one consolidated high school to upgrade both existing high schools. Williams gives what has become the classic response to citizens who oppose SBA-funded consolidation plans: that would not be the same competitive plan that won SBA funding.[8]

What makes a school building plan competitive? The SBA review team ranking is the basis for funding. After each plan is evaluated by a statewide RESA committee,[9] a review team composed of three SBA staff members and Williams then re-evaluates the plans using the SBA "Plan Review Team Project Summary Form." The SBA team evaluates each project on a scale from one to nine on 7 criteria that generally match the goals in section 18-9D-16. Then the SBA multiplies each rank by the "SBA Index": 1.5 for economies of scale, curricular improvement, educational innovations, and existing health or safety conditions; 1.0 for multicounty projects, existing severity of need for space to house projected student enrollment, impact on student travel, and an SBA-added "goal": SBA review team overall rating.

The law nowhere authorizes such indexing, nor does it suggest that these seven criteria are of unequal importance. The SBA simply invented this weighting in 1989, deciding "by consensus" that four of the criteria were the "most significant in the evaluation of projects" (C. Williams, personal communication, September 11, 1996). Ranking economy of scale at 1.5, especially when that criterion no longer truly refers to economy, but refers instead to the SBA-invented school size numbers, totally skews the rankings to schools of SBA-favored size. Improved curriculum is assumed to follow large school size, so larger schools automatically get higher rankings for curriculum improvement. As with the "economy of scale" numbers, no research supports this conclusion.

Downgrading severity of need for space to 1.0 ignores the fact that a few West Virginia counties' schools are experiencing booming growth and need larger facilities. The legislature thought this was as important as the other goals; the SBA does not. The State Board of Education emphasizes the importance of multicounty projects and talks about

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[7]In 1990 the legislature reduced the number of professional educators funded by the state from 55 per thousand to 53½ per thousand commencing for the school year 1991-1992 and thereafter (W. Va. Acts 1567, 1990). This reduction in the number of state-funded professional educators freed funds for salary increases for the teachers who remained (Howley, 1996). State lawmakers used this change in the state school aid formula as additional pressure to force schools to consolidate (Hughes, 1991).

[8]This article does not address the extremely important issue of state/local education authority and control over school closings and consolidations, particularly in a state with a "thorough and efficient" education clause in its constitution. In West Virginia, this issue has been clearly resolved in favor of the state. *See Kanawha Co. Bd. of Educ. v. W. Va. Bd. of Educ.*, 399 S.E.2d 31 (W. Va. 1990). See also *Pell v. Monroe Co. Bd. of Educ.*, 426 S.E.2d 510 (W. Va. 1992) (discussing how introduction of the SBA has altered the state/local power relationship).

[9]A RESA is a Regional Educational Service Agency, a multicounty educational service organization, created by statute: W. Va. CODE § 18-2-26 (1994). A statewide RESA team is composed of school board members and superintendents, representing each of the eight state RESAs.

abolishing county school boards, if need be, to accomplish them (Blackford, March 31, 1995). The SBA rates multi-county projects at 1.0, discouraging counties from proposing them.

Although numerical rankings give the process the appearance of objectivity, there are no objective criteria (except the economy of scale numbers) by which these rankings are assigned. Transportation is a good example of the underlying subjectivity of the SBA review process. Transportation becomes more expensive (West Virginia Department of Education, 1996b) and much harder on rural children and their families after consolidation (Fox, 1996). The SBA decided those considerations were worth only a 1.0. Not only the weighted index, however, but also the raw number is subjective.

For example, when the review team looked at transportation in Pendleton County (where a mountain separates the school to be closed from the new one to be built with SBA funds), the SBA review team gave transportation a score of 3. In the consolidation hearing the judge asked Williams, "[I]f you had two schools, you would have 5s for both of those, right?" (*Pendleton Citizens v. Marockie*, 1996, p. 125). Williams responded:

> *Conceptually* I understand what you're saying and that's probably correct. *The way it would work in reality* is that if now we're talking about a consolidated school that has every kid in the county in it, when you look at that relationship, there's only about one percent of the kids total that would have major variations in travel time, so *consequently it doesn't have a lot of impact.* (*Pendleton Citizens v. Marockie*, 1996, p. 125-6) [emphasis added]

The Court points out that previous testimony has been that twice as many kids (10%) will be on the bus more than 45 minutes. Williams replies, "[W]hen you look at the total number of kids in the county . . . that's a very, very small percentage" (*Pendleton Citizens v. Marockie*, 1996, p. 125-126). The lesson is, with its minimum school size numbers, the SBA cares very much about precise and objective standards. With regard to transportation, 10% of a county's schoolchildren are the SBA's "very, very small percentage," and the ostensibly objective evaluation is skewed to reflect that.

Have the SBA Economy of Scale Numbers Saved Money?

A full-scale economic analysis is beyond the scope of this article, but some simple figures are instructive. SBA "economy of scale" numbers are based on pupil-teacher ratios. Although a quarter of West Virginia's schools have been closed since 1990 (Howley, 1996), there were 13.45 professional educators per pupil then and in 1995 there were 13.54 (Margolin, 1996). Thus, closing a quarter of the schools has made a negligible difference in the targeted "economy" factor. Similarly, in 1990 there were 22.04 students for each service worker (bus drivers, secretaries, janitors, aides), while in 1995 there were 22.02 (Margolin, 1996). Major school consolidation has produced no savings in the most expensive budget factor, personnel.

From projects funded to date, the SBA has promised $20,898,049 in annual cost savings; that is monies counties will save *each year* as a result of SBA construction grants (SBA, 1995). The data in Table 1 compare projected savings from the SBA (1995) to school budget deficits for all counties with deficits for fiscal year 1995 (Margolin, 1996). Of the counties listed in this table, Braxton, Harrison, Mingo, Nicholas, Randolph, Ritchie, Roane, Summers, and Tucker had no budget deficits before they undertook their consolidation programs. This is not conclusive, but it is suggestive. Not only have the promised savings not materialized, but these counties are, for the first time, running deficits. Part of Randolph and Clay Counties' fiscal problems result from loss of levies defeated following forced consolidation, an additional financial hazard (C. Howley, personal communication, October 8, 1996).

Had the SBA looked at any research on the massive national wave of school consolidation in the 1960s and 70s, this lack of savings would have been no surprise. In one study of 49 districts, 35 promised savings from closing schools, but only 12 bothered to calculate them, and of those, 8 concluded the closures produced no savings or additional costs (Valencia, 1984). A study of consolidations in all 50 states from 1980 to 1984 found that for "Administration, Instruction, Transportation, Operations and Maintenance, Total Costs, and Capital Projects . . . only Administration . . . indicated a significant . . . savings as a result of consolidation" (Streifel et al., 1991).[10] Because SBA "minimum size" schools are large, they have been very expensive. The SBA has funded $509 million in school construction since 1990 (SBA, 1996). Seventy-nine percent of that money was spent on 73 schools (less than 10% of the schools in the state) leaving 18% of the money for the remaining 90% of the schools. The total $509 million state allocations to SBA projects, though not "counted" in the state education budget, represent capital costs only, not interest (SBA, 1996). To restate, half a billion dollars has been spent building large schools based on "economy of scale" numbers, and produced no demonstrable savings.

[10]Administrative costs went up only 10% compared to 33% in unconsolidated schools (Streifel et al., 1991).

Table 1
SBA Projected Savings Versus Actual County Deficits

County	Projected Annual Savings From Consolidation ($)	Actual Deficit FY90 ($)	Actual Deficit FY95 ($)
Braxton†	150,000	0	431,974
Clay†	362,000	45,559	214,171
Grant†	No SBA funding	0	119,799
Harrison	1,955,598	0	757,689
Lincoln†	No SBA funding	0	200,933
Mingo	1,241,200	0	3,910,836
Monroe*†	250,000	0	362,573
Nicholas†	200,000	0	314,728
Pendleton†	No SBA funding	0	167,135
Randolph†	281,800	0	526,905
Ritchie†	190,000	0	197,133
Roane†	600,000	0	16,753
Summers†	420,000	0	281,951
Tucker†	0	0	96,759
Webster†	No SBA funding	0	273,826

†Sparsely populated county
*Building not finished

Large Schools: Not Economical, But Perhaps More Comprehensive?

Although these projects may not have saved money, additional curriculum is promised to make these building projects well worth the capital costs (and the deficits).[11] Larger schools do offer more courses than smaller ones (Haller, Monk, Bear, Griffith, & Moss, 1990). However, research shows that offering more courses is not equivalent to offering a more comprehensive program (Monk, 1986). A "comprehensive" program includes a base or introductory course, advanced courses for which the base course is a prerequisite, and alternate courses that serve students who are not interested or lack the special talent the subject requires (Haller et al., 1990). In an extensive and widely cited study, David Monk (1986) examined New York high schools ranging from less than 100 students to larger than 3000. He found that below 400 students, additional students translated into improved student access to courses, but above the 400-student level increases in enrollment made little difference. In terms of curriculum comprehensiveness,

> the case for maintaining secondary enrollment levels at the 400 pupil level is convincing; the case for maintaining secondary enrollment levels beyond 400 is more problematic. In light of this, blanket policies requiring or encouraging school reorganizations that lead to increases in school size regardless of the starting point are ill advised. (Monk, 1986, p. 25)

Following up on Monk's insight, researchers used the High School and Beyond database, representative of all public and private high schools in the United States in 1980, to extend the study of curriculum comprehensiveness (Haller et al., 1990). Examining science, math, and foreign languages and using a more refined notion of comprehensiveness, they found again that "schools that graduate 100 students are probably the equal of much larger institutions" (Haller et al., p. 16). They also found that in larger schools, additional classes "tend to be used to serve the curricular needs of academically talented or college-going students rather than the needs of the less talented or those bound for the workplace" (Haller et al., p. 14).

[11]For elementary students, additional curriculum is no benefit. Since there is no evidence of economies intrinsic to larger school size, and no benefit of additional curriculum for elementary students, there are no reasons to insist on enlarging elementary schools, as the SBA is doing. State education law allows ungraded K-2 classes, so that even the SBA's 25 student/teacher rationale for school sizes is totally irrelevant. W. Va. CODE § 18-5-18(c) (1994).

The SBA arbitrarily insists that high schools must have 800 students, twice the size necessary for a comprehensive curriculum (Haller et al., 1990; Monk, 1986). To achieve that school size, students who attend smaller high schools, students who are generally poorer and more rural, must lose their schools and be bused long distances to the larger school so that affluent children can have a few academic advantages (Haller et al.).

Large Schools: Not More Economical or Comprehensive, But Perhaps More Thorough?

Developing Minds & Bodies

> [A] thorough and efficient system of schools . . . *develops*, as best the state of education expertise allows, the *minds, bodies and social morality* of its charges to prepare them for useful and happy occupations, recreation and citizenship, and does so economically. (*Pauley v. Kelley*, 1979, p. 877)

Thoroughness reflects educational outcomes: development of mind, body, and social morality. The "state of education expertise" has, perhaps, changed most radically regarding school size and educational outcomes since the Supreme Court formulated this standard (Howley, 1989a). In 1964, a study of small Kansas high schools concluded that small high schools offered students greater opportunities to participate in extracurricular activities and to exercise leadership roles (Barker & Gump, 1964; also see Coladarci & Cobb, 1996). Researchers began to consider other effects of school size on student achievement while taking into account socioeconomic status (Howley, 1989b). Controlling for socioeconomic status (SES) is important because SES is the most influential and consistent factor related to schooling outcomes—low SES directly relates to poor educational outcomes (Fowler & Walberg, 1991). Rural areas are generally poor areas and this is especially true in West Virginia, but poverty is not confined to rural areas. In 1995, 46% of all state school students were receiving free and reduced lunch (West Virginia Department of Education, 1995). Mounting evidence shows that students in low SES communities perform much better in small schools (Fetler, 1989; Howley, 1994, p. 1, citing Friedkin & Necochea, 1988; Huang & Howley, 1993; Plecki, 1991; Walberg, 1989).

A 1996 West Virginia study supports the positive relation, found in many other places, between small schools and improved learning for poor children (Howley, 1996). Howley looked at school size, achievement (measured by standardized test scores), and SES (measured by school free- and reduced-lunch recipients) for all schools in West Virginia. Small school size benefited the achievement of impoverished West Virginia students, while large school size harmed it. This effect was greatest for high school students, suggesting that larger schools systematically widen the gap between the achievement of impoverished students and the achievement of affluent students. Howley (1996) proposes that

> large schools are not just *dysfunctional* for impoverished students, but that they dramatically *compound* the educational disadvantages that inevitably threaten impoverished students. They seem actually to harm students who already confront more than their share of threats. Doing no harm, of course, is the key tenet of competent professional practice. (pp. 154-155)

Although consolidation opponents are often characterized as stubborn hayseeds fighting a foolish battle against progress and modernism, the mechanisms that make small schools better for poor students are just those cited by rural residents as they struggle to save their community schools.

> Increased school size has negative effects upon student participation, satisfaction, and attendance, and adversely affects the school climate and a student's ability to identify with the school and its activities. . . . In addition, small schools may be friendlier institutions, capable of involving staff and students psychologically in their educational purposes. (Fowler & Walberg, 1991, p. 200)

These same factors affect dropout rates: higher dropout rates are associated with larger school enrollments (Fetler, 1989).

The bottom line for rural parents, though, is increased transportation to consolidated schools (Jones, 1993). Urban administrators tend to shrug and minimize the issue. Dr. Marockie claims it gives kids a chance to socialize that they might not get if they stayed in the rural community (Hughes, 1991). Students, on the other hand, consider time devoted to riding the bus a great waste of physical and intellectual time (Fox, 1996). Long travel times lower life quality for students and families; they prevent kids' participation in after-school activities, but most important is their negative impact on student achievement (Lu & Tweeten, 1973). Although students who spend more time on buses tend to come from low-income rural areas, even when SES is held constant, longer bus rides correlate with lower academic achievement (Lu & Tweeten, 1973). Students suggest that time devoted to travel causes fatigue, so that they are not as willing to put the required time and effort into homework assignments (Fox, 1996).

Thus, the SBA, by forcing larger schools on West Virginia counties whether they want them or not, adds to the educational distress of poor and rural children, depresses academic achievement, and fails to thoroughly develop

Table 2
West Virginia County School Data

County	Students per Square Mile	% Free & Reduced Lunch	1995 Deficits ($)	% Service Personnel as Bus Operators	% K-4 on Bus More than 30 Min. One-way
Barbour*†	8.15	67.64		28	38
Berkeley	35.71	36.41		21	25
Boone*	9.91	50.09		19	19
Braxton*†	5.19	57.56	431,974	29	23
Brooke*	43.95	33.07		17	38
Cabell	50.00	42.19		15	20
Calhoun*†	5.96	78.13		30	25
Clay*†	6.21	72.55	214,171	32	49
Doddridge*	4.35	55.75		30	45
Fayette	13.22	54.88		20	12
Gilmer*	3.84	66.85		34	65
Grant*†	3.95	54.37	119,799	27	17
Greenbrier*	6.01	50.10		26	13
Hampshire*	5.21	52.18		33	65
Hancock	56.43	30.66		19	46
Hardy*†	3.38	46.54	94,360	29	43
Harrison	29.42	43.88	757,689	18	18
Jackson	10.94	43.92		24	23
Jefferson	31.35	34.46		21	13
Kanawha	36.54	35.82		10	4
Lewis*	7.53	54.02		24	64
Lincoln*	9.96	63.99	200,993	22	30
Logan	17.49	50.53		17	33
Marion	29.43	39.31		18	20
Marshall	19.25	48.92		25	17
Mason	10.41	45.09		22	26
Mercer	24.93	50.47		17	4
Mineral	14.57	44.87		26	18
Mingo	16.00	54.83	3,910,836	20	17
Monongalia	28.22	33.92		19	5
Monroe*†	4.31	52.56	362,573	38	35
Morgan*	9.77	40.95		25	42
McDowell	12.19	78.13		26	2
Nicholas*	7.82	54.09	314,728	26	0.8
Ohio	58.20	34.19		15	13
Pendleton*†	2.09	46.10	167,135	39	20
Pleasants	10.75	41.32		21	36
Pocahontas*†	1.64	62.20		30	34
Preston*†	8.28	59.75		28	33
Putnam	24.46	31.06		18	23
Raleigh	22.44	47.82		21	17
Randolph*†	4.83	56.112	516,905	23	26
Ritchie*	4.10	53.72	197,133	25	34
Roane*†	6.34	65.19	16,753	32	75
Summers*†	5.27	59.77	281,951	33	24
Taylor	15.70	52.67		30	20

Table 2 Continued

Tucker*†	3.38	56.25	(95,759)	28	13
Tyler*	6.65	50.20		32	30
Upshur†	12.13	52.48		26	26
Wayne	15.57	44.23		22	40
Webster*†	3.70	75.18	(273,826)	26	28
Wetzel	10.54	43.34		20	29
Wirt*	5.03	56.88		0	38
Wood	39.56	37.24		14	16
Wyoming	11.50	58.92		23	13

*Sparsely populated
†Counties without excess levy
Note: Table values are taken from: Margolin, 1996 (sparsely populated counties, students per square mile, counties without excess levy, 1995 deficits); West Virginia Department of Education, 1995 (percent free and reduced lunch); West Virginia Department of Education, West Virginia School Buses and Operators - 1994-95, Margolin, 1996 (percent service personnel as bus operators); West Virginia Department of Education (percent K-4 on bus more than 30 minutes one way).

these students' minds. Long daily bus rides are exhausting and unhealthy, prevent participation in sports, and so fail to thoroughly develop their bodies. These effects could be undone at one stroke: by keeping and improving small schools that are already in place.

Developing Social Morality

The one- (large) size-fits-all school that the SBA funds proves neither economical, nor thorough, nor efficient, but there are other costs, social costs, that appear on no balance sheets and are calculated only in poorer lives for citizens who lose their local schools.

All too often school closing proposals are unveiled at the last moment, and although the requisite public hearings are held, the decision has already been made (Howley, 1996). These hearings give lip-service to a notion of public input. The local board listens, but it knows what must be done to bring millions of dollars into the county schools: to meet economy of scale numbers, board members must vote to close small schools and build or add on to larger ones (Jones, 1993). A cynicism has been bred in citizens about their local boards as pawns of the state, about the individual's lack of power over even their local board members, and about the relative unimportance of schoolchildren's education and communities' lives when put in the balance against state money and SBA power (DeYoung, Howley, & Theobald, 1995; Howley, DeYoung, & Theobald, 1996).

In counties across West Virginia, school closing fights have pitted rural communities against their county seats (where larger schools are usually built) and provided a focus for anti-tax groups to organize against bond or levy support for these unpopular proposals (Jones, 1993). Residual sentiment against school financial support and lingering anger over bitter political battles have left too many rural counties, virtually powerless before, now sullen and divided (Jones, 1993).

To urban administrators, moving a school 10 or 15 miles down the road may seem a minor adjustment on the state map, but local schools are the only town hall, gym, polling place, theater, dance hall and recreation center (Jones, 1993). Poor parents with worn-out cars, welfare mothers with more kids at home, grandparents, and proud neighbors can get to the community school for the talent show or kindergarten graduation, but they cannot get 10 or 15 miles down winding two-lane roads or over mountains.[12] Parental and community involvement in the schools drops precipitously (N. Updegrave, personal communication, September 1996). No balance sheet is kept of such immeasurables, but these systematic blows to education, community, and citizenship cannot be good for social morality of students or the state.

A Proposal

The SBA statute, W. Va. § 18-9D-16, lists eight equal goals to be considered in SBA school funding decisions. These goals have been interpreted arbitrarily and applied inequitably to force large school building, close smaller

[12]Nebo School, a three-room school in a desperately poor area, still raised $7000/year from fund raisers and had 100% parent participation at PTO. As part of the Clay County consolidation plan, the school was closed and students moved eight miles down Route 16 to Ivydale. Two parents from Nebo have finally been cajoled, after 4 years, to come regularly to the Ivydale PTO (N. Updegrave, personal communication, September 1996.)

schools, and make facility funds unavailable for smaller schools. Three simple changes in SBA project evaluations would change these outcomes.

(1) Discard SBA economy of scale minimum school size requirements and replace them with scarcity-sensitive economy of scale guidelines for county facility plans.

(2) Discard SBA weighting of the statutory goals so that all eight legislative goals are considered equally in allocating funding.

(3) Discard the SBA invention, "overall SBA rating," so that only statutory goals, not SBA goals, are used.

These straightforward changes would align SBA funding with the relevant law and discontinue the SBA's imposition of its political, cultural, and educational goals in place of the statute. The economy of scale numbers have already reshaped West Virginia's school system: by directing 79% of a half billion dollars to 73 school projects, the SBA has set its values in bricks and mortar, while failing to give equal attention to the remaining 90% of schools not privileged to be chosen.

Beyond discarding the economy of scale minimum school size numbers, West Virginia needs to re-evaluate school facility financing in light of geographic reality and the Recht Decision. Relatively little money will be available for school facilities for the next 30 years while the SBA-incurred debts are repaid. Will small schools inevitably have to close because they have not been maintained under SBA large-school standards, and no more money is forthcoming? Or will West Virginia recognize that its community schools, already scattered throughout its rural areas, can provide the best education along with community and social stability and provide them in an economical, thorough and efficient manner?

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