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To: Quality Schools Interim Committee

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Subject: Disparities in School Mill Levies

School mill levies vary significantly between districts. This paper shows the extent of those differences in FY 2004 and how disparities in taxable value per student and natural resource revenue per student contribute to disparities in mill levies. It then discusses policy issues raised by those disparities.

Disparities in FY 2004 Mill Levies

To quantify disparities in mill levies, this paper will look at four questions:
- What is the difference between the highest and lowest mill levies?
- Do most districts have mill levies that are close together, and if so, how close are they?
- Are there significant numbers of districts with much lower than average mills?
- Are there significant numbers of districts with much higher than average mills?

The first question can be answered by comparing the highest and lowest mill levies.

The second question can be restated this way: Does the distribution of mill levies have the classic bell curve shape, with most of the districts concentrated in the middle of the distribution? If it does, how wide is the central peak of the distribution? These questions will be answered by plotting the distribution of mill levies and measuring the width of the area in the middle of the distribution that contains two thirds of the districts.

Answering the first question tells us about the most extreme districts, but does not tell us whether they are single exceptions or whether there are many districts with high or low mill levies. The third and fourth questions address this issue. The third question will be answered by finding the lowest mill with 10% of districts having a lower levy (the tenth percentile) and determining how far it is from the middle of the distribution. The fourth question will be answered by finding the highest mill with 10% of districts having a higher

levy (the ninetieth percentile) and determining how far it is from the middle of the distribution.
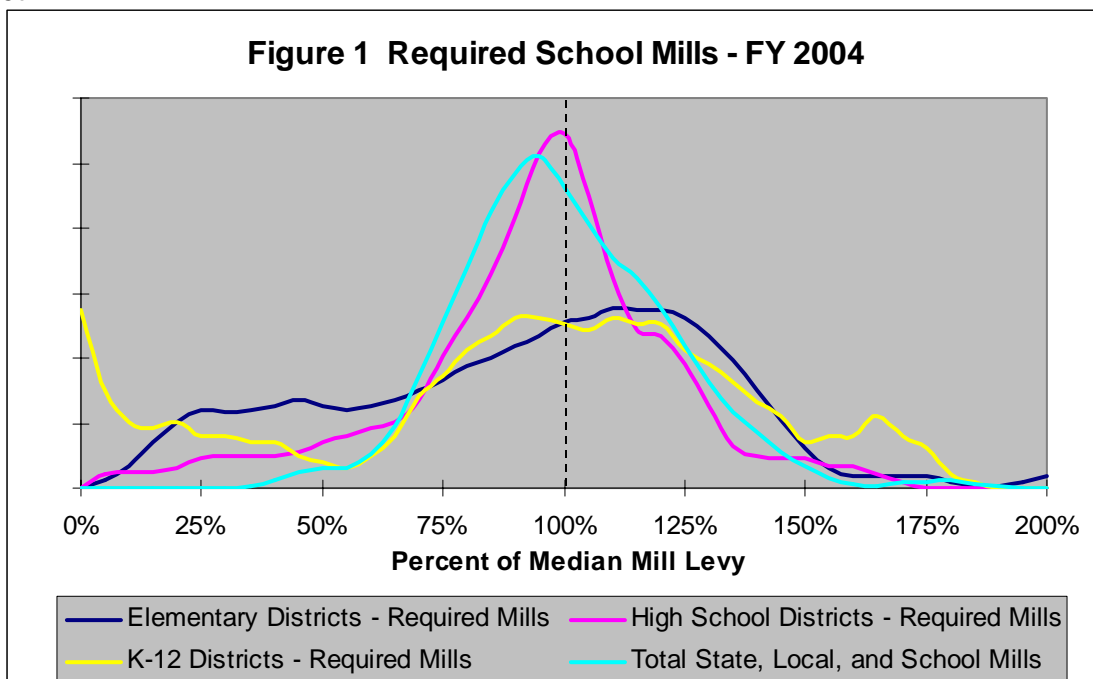
Required Mills

School districts are required to spend at least the BASE amount in their general funds and to transport students. Taxpayers in every district also pay countywide retirement and transportation levies. In this report, the sum of mill levies for these purposes will be called required mills. Table 1 shows the highest and lowest required mill levy for each of the three types of school district. It also shows the difference between the highest and lowest levies and the median, which is the amount that half the mill levies are lower than and half are higher than.

Table 1 Range of Required School Mills - FY 2004			
	Elementary Districts	High School Districts	K-12 Districts
# of Districts	279	110	55
Highest Mill Levy	144.8	91.9	132.7
Lowest Mill Levy	10.8	3.2	0.0
Highest - Lowest	134.0	88.7	132.7
Median Mill Levy	68.4	55.7	75.4

Required mill levies vary widely within each type of district, and the median required mill levy varies between types of district.   The difference between the highest and lowest required mill levies is 1.96 times the median for elementary districts, 1.59 times the median for high school districts, and 1.76 times the median for K-12 districts.

Figure 1 shows smoothed distributions of required mill levies for the three types of school district.

Figure 1 Required School Mills - FY 2004

For comparison, it shows the distribution of total mills levied for all purposes by the state,

local governments, and school districts. To show the relative dispersion of the four groups, required mills for each district were divided by the median for its group and total state, local, and school mills were divided by the median total mills, 452.1.

A distribution of mill levies with limited disparities would have a high peak around 100% of the median and small tails, or the parts of the distribution far from the median. The distribution of total state, local, and school mills has this general form. The distribution of required mills for high school districts also has a high peak around the median, but has more districts with low mills. The distributions for elementary and K-12 districts are much less concentrated. The peaks close to the median are lower, and there are significant numbers of districts well below the median. In fact, the K-12 distribution has three peaks: one around the median, one at about 160% of the median, and another at zero mills.

Table 2 shows the measures of how concentrated districts are in the middle of the distribution and how far the highest and lowest 10% of districts are from the middle.

	Table 2 Dispersion of Required School Mills and Total Mills - FY 2004			
	Elementary Districts	High School Districts	K-12 Districts	Total Mills
2/3 of districts have mills within this percent of the median	37.6%	23.1%	45.0%	19.5%
10% of districts have mills at least this percent lower than the median	62.1%	38.3%	78.0%	22.6%
10% of districts have mills at least this percent higher than the median	38.3%	25.6%	47.3%	29.4%

The first row shows the measure of how narrow or wide the central peak of the distribution is. It shows that for elementary districts, two-thirds of districts have required mills that are within 37.6% of the median. The distribution of high school required mills has a higher, narrower peak, with two-thirds of districts having required mills that are within 23.1% of the median. The distribution of K-12 district required mills has a shorter, wider peak, with two thirds of districts having required mills within 45% of the median. The distribution of total mills is more concentrated around the mean than any of the distributions of required mills, with two-thirds of districts being within 19.5% of the median.

The second row of Table 2 shows the measure of how far the districts with the lowest mills are from the middle. It shows that 10% of elementary districts with the lowest required mills have required mill levies that are at least 62.1% below the median. High school districts with the lowest required mills are closer to the middle, with the lowest 10% having levies that are at least 38.3% below the median. K-12 districts with the lowest required mills are farther from the middle, with the lowest 10% having levies that are at least 78.0% below the median. The distribution of total mills has less dispersion at the low end than any of the required school mill distributions, with the lowest 10% having levies at least 22.6% below the median.

The third row of Table 2 shows the measure of how far the districts with the highest mills are from the middle. There is less difference between the distributions in dispersion at the

high end. The top 10% of districts have mills that are at least 38.3% higher than the median for elementary districts, 25.6% higher for high school districts, 47.3% higher for K-12 districts, and 29.4% higher for total state, local, and school levies.

For required mills, the four questions can be answered as follows:

- The difference between the highest and lowest mill levies ranges from about 1.6 times the median levy, for high school districts, to almost 2 times the median levy, for elementary districts.

- Most high school districts have mill levies that are relatively close together, with two-thirds being within 23% of the mean. Elementary and K-12 district mill levies are not as tightly grouped in the middle, with two-thirds of elementary districts being within 38% of the median and two-thirds of K-12 districts being within 45% of the median.

- High school districts with low mills are relatively close to the middle, while elementary and K-12 districts with low mills are farther from the middle.

- Elementary and high school districts with high mills are relatively close to the middle. There is a group of K-12 districts that has significantly higher mill levies than most K-12 districts.

These answers to the four questions identify two significant disparities in school district required mill levies. There are significant numbers of elementary and K-12 districts with low required mill levies, and there is a group of K-12 districts with high required mill levies.

The maps on the following two pages show the geographic distribution of required mill levies. The first map shows high school and K-12 districts, and the second map shows elementary and K-12 districts.


Total School Mills

School districts generally levy more than the required mills. They may choose to spend up to 25% more than the BASE amount in their general fund budgets and levy additional mills to support the additional expenditures. Districts may also levy mills for their other funds, such as debt service and building reserve.

Table 3 shows the lowest, highest, and median total school mill levies and the difference between the highest and lowest for the three types of school district.

Table 3 Range of Total School Mills - FY 2004			
	Elementary Districts	High School Districts	K-12 Districts
# of Districts	279	110	55
Highest Mill Levy	324.6	252.3	297.8
Lowest Mill Levy	10.8	3.2	0.0
Highest - Lowest	313.8	249.2	297.8
Median Mill Levy	106.6	95.4	164.2

The median total mills are 38 higher than the median required mills for elementary districts, 40 higher for high school districts, and 89 higher for K-12 districts. The difference between the highest and lowest total mill levies also is much larger than the difference between the highest and lowest required mill levies. It is 2.9 times the median for elementary districts, 2.6 times the median for high school districts, and 1.8 times the median for K-12 districts.

Figure 2 shows smoothed distributions of total school mills, divided by the median, for the three types of school district. For comparison, it also shows the distribution of total state, local government, and school district mills.

Figure 2 Total School Mills - FY 2004
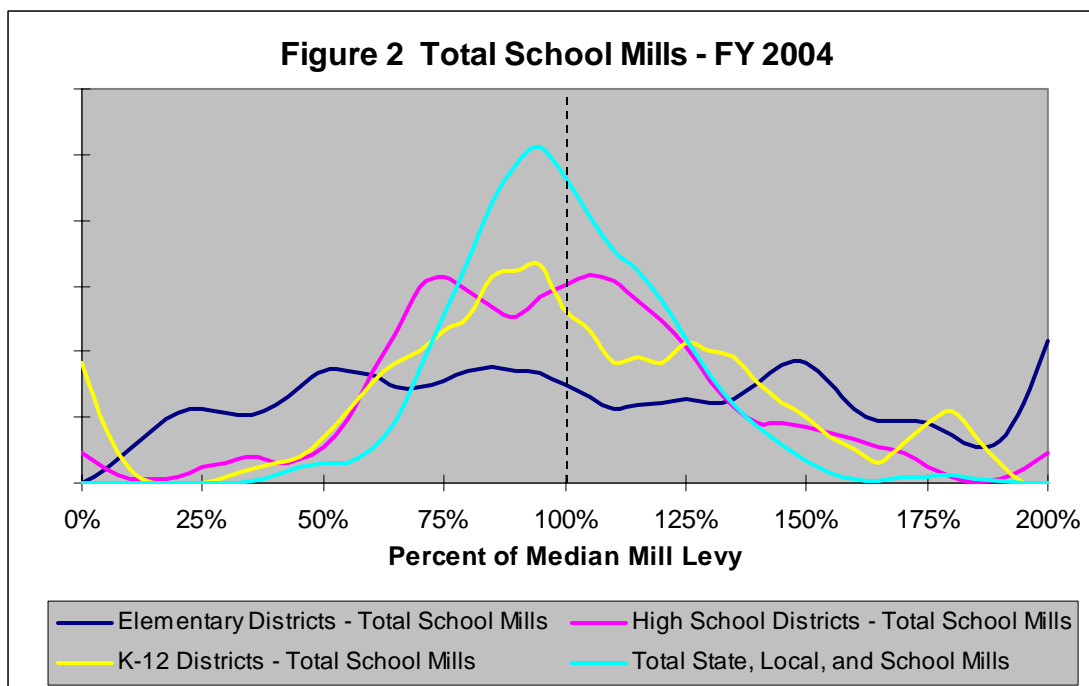
For all three types of district, the distribution of total mills is flatter than the distribution of required mills, with less of a central peak, and more districts significantly higher than the median.

Table 4 shows the same measures of concentration and dispersion as in Table 2 but for total school mills. It also repeats the measures for total state, local government, and school district mills.

	Elementary Districts	High School Districts	K-12 Districts	Total Mills
Table 4 **Dispersion of Total School Mills and Total Mills - FY 2004**				
2/3 of districts have mills within this percent of the median	53.8%	28.0%	37.0%	19.5%
10% of districts have mills at least this percent lower than the median	64.6%	35.4%	37.4%	22.6%
10% of districts have mills at least this percent higher than the median	75.6%	43.9%	54.2%	29.4%

Comparing the first row of Table 4 with the first row of Table 2 shows that the distributions of total mills are less concentrated around the median than the distributions of required mills for elementary and high school districts, but the distribution of mills is more concentrated for K-12 districts.

Dispersion at the low end is about the same for total school mills and required mills for elementary and high school districts. Ten percent of elementary districts have total mills at least 64.6% below the median, and 10 % of high school districts have total mills at least 35.4% below the median. For required mills, the percentages were 62.1% and 38.3%. K-12 districts show much less dispersion at the low end for total mills than for required mills. The lowest 10% of total mills extend up to 37.4% below the median, while ten percent of K-12 districts have required mills that are at least 78.0% below the median.

High school and K-12 districts have similar dispersion at the high end for total mills and required mills. The highest total elementary district mills are farther from the middle than the highest required elementary district mills, with 10% of districts having total mills at least 75.6% higher the median.

For total school mills, the four questions can be answered as follows:

- The difference between the highest and lowest total mills ranges from 1.8 times the median for K-12 districts to 2.9 times the median for elementary districts.

- Most high school districts have mill levies that are relatively close together, with two-thirds being within 28% of the mean. Elementary and K-12 district mill levies are not as tightly grouped in the middle, with two-thirds of K-12 districts being within 37% of the median and two-thirds of elementary districts being within 54% of the median.

- Most high school and K-12 districts with low total mills are relatively close to the middle, while elementary districts with low mills are farther from the middle. However, there are several K-12 districts with very low and even zero total mills.

- High school districts with high total mills are relatively close to the middle. There are groups of elementary and K-12 districts with mills that are significantly higher than the median.

Answering these four questions identifies two disparities in total school mills. There are significant numbers of elementary and K-12 districts that have very low total mills, and there are significant numbers of elementary and K-12 districts that have very high total mills.

The map on the next page shows the geographic distribution of total school mill levies for high school and K-12 districts, and the following map shows the same information for elementary and K-12 districts.

Compared to total state, local government, and school district mills, the distributions of school mills are less concentrated in the middle, have the lowest 10% farther from the middle, and, with the exception of high school district total mills, have the highest 10% farther from the middle.

Reasons for Disparities in Mill Levies

There are two types of reasons for disparities in school district mill levies: differences in spending and differences in district revenue capacities.

Spending Differences

BASE spending levels are a fixed amount per district plus an amount per student. Thus, BASE spending per student is higher for smaller districts. Districts may have general fund spending up to 20% more than their BASE amount, and in a few cases can exceed this cap. Districts also vary in their spending on student transportation, debt service, and other non-general fund expenses. Spending differences are not addressed in this report.

Revenue Capacity Differences

Schools receive revenue from property taxes and from other sources, collectively called non-levy revenue. District revenue capacities differ in two ways. The taxable value of property per student differs between districts, and non-levy revenue per student differs between districts. Property tax revenue equals the taxable value of property in a district multiplied by the mill levy. A district with higher taxable value per student can raise the same property tax revenue per student with a lower mill levy. A district with higher non-levy revenue per student can support the same level of spending per student with less revenue from property taxes.

State guaranteed tax base aid (GTBA) limits the effect of low taxable value per student. GTBA provides a subsidy that essentially guarantees a minimum amount of revenue per mill for a school district's BASE general fund levy and certain other mill levies. This places an upper limit on mills that must be levied for the funds where the state provides GTBA. GTBA does not affect districts with high taxable value, and there is no lower limit on mill levies.

Differences in the Taxable Value of Property

Table 5 shows the highest and lowest taxable value per student (average number belonging or ANB) and the median for each type of school district.

Table 5 Range of Taxable Value per ANB - FY 2004 (Calendar Year 2003)		
	Elementary Districts	High School Districts	K-12 Districts
# of Districts	271	110	55
Lowest TV/ANB	$91	$500	$411
Median TV/ANB	$23,158	$36,263	$17,910
Highest TV/ANB	$607,565	$271,632	$68,445

The median taxable value per student is about $23,000 for elementary districts, about $36,000 for high school districts, and about $18,000 for K-12 districts. For elementary districts, the lowest taxable value per student is less than $100 and the highest is more than $600,000. For high school districts, the lowest taxable value per student is $500 and the highest is about $270,000. The difference is not quite as extreme for K-12 districts, with the lowest taxable value per student being about $400 and the highest about $68,000.

Figure 3 shows the distribution of taxable value per ANB, as a percent of the median, for the three types of district.

Figure 3 Taxable Value per ANB - FY 2004

Percent of Median Taxable Value per ANB

Elementary Districts — High School Districts — K-12 Districts
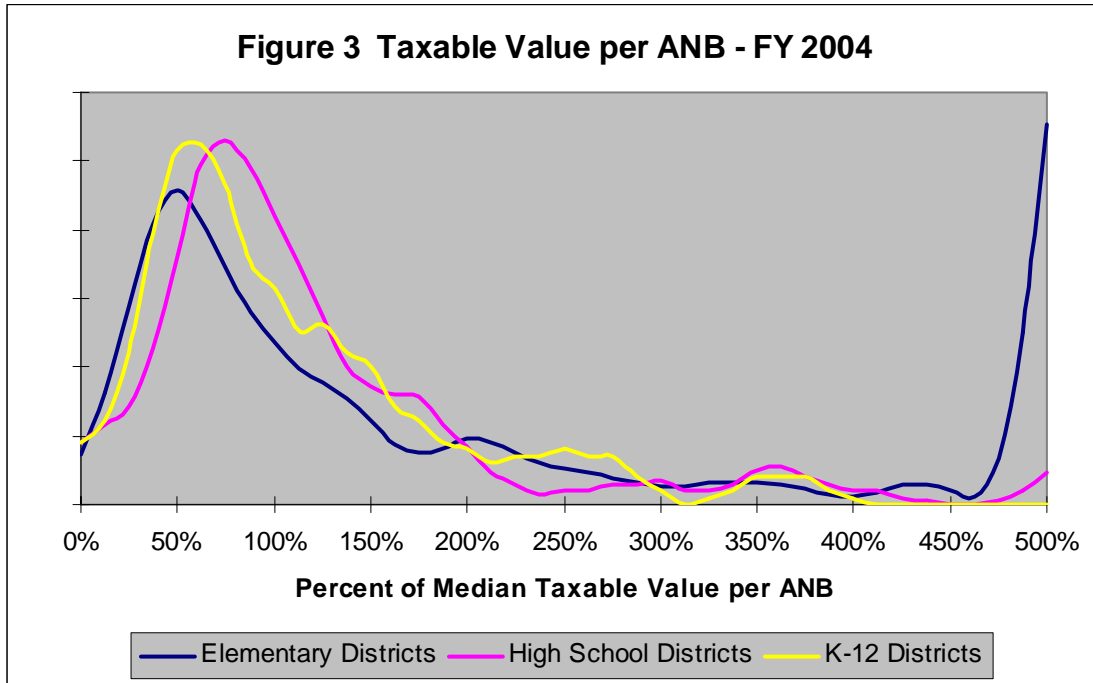
All three distributions have a peak at less than the median and a long right tail of values much higher than the median. The elementary district distribution appears to have a second peak at 500% of the median, but this is because the graph only goes that high. It actually shows that about 10% of elementary districts have taxable value per student more than five times higher than the median.

Table 6 shows measures of concentration and dispersion of taxable value per student.

Table 6
Dispersion of Taxable Value per ANB

	Elementary Districts	High School Districts	K-12 Districts
2/3 of districts have TV/ANB within this percent of the median	87.0%	55.0%	55.0%
10% of districts have TV/ANB at least this percent lower than the median	58.9%	49.2%	53.5%
10% of districts have TV/ANB at least this percent higherer than the median	427.2%	124.5%	137.4%

9

All three distributions have significant peaks at less than the median value, but significant numbers of districts are outside the peaks. The distributions of taxable value per student are less concentrated than the distributions of required mills because GTBA limits the mills that must be levied by districts with low taxable value per student. This can be seen by comparing the first row of Table 6 with the first rows of Tables 2 and 4. For high school and K-12 districts, the band containing taxable value per student for two-thirds of districts extends 55% on either side of the median, and for elementary districts, it is 87%. Tables 2 and 4 show that, in all but one case, two-thirds of mill levies are within 45% or less of the median.

All three distributions have a significant number of districts much higher than the median. The top 10% of high school and K-12 districts have taxable value per student more than twice the median, and the top 10% of elementary districts have taxable value per student more than five times the median.
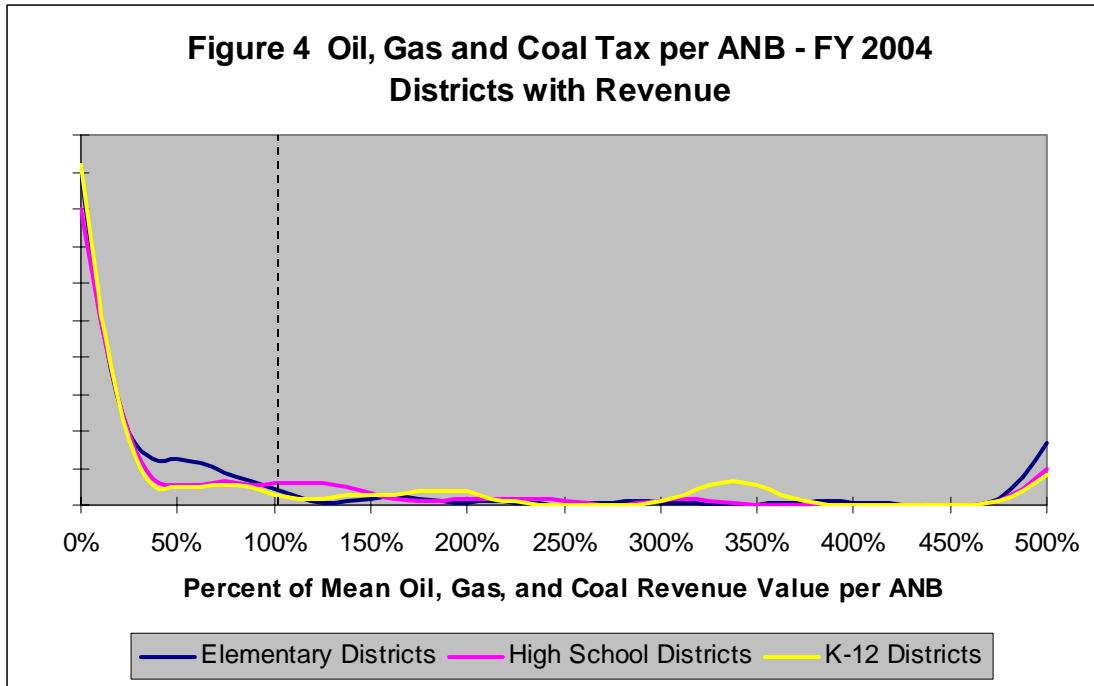
Differences in Non-Levy Revenue

Districts receive a number of types of non-levy revenue. Two significant types of non-levy revenue that vary by school district are the school districts' shares of the oil and gas production tax and the coal gross proceeds tax.

Table 7 shows the lowest and highest amounts of revenue per student from the oil and gas production tax and the coal gross proceeds tax. It also shows the percent of districts with no revenue per student from these taxes and the average revenue per student. (Since the majority of districts receive no revenue from these taxes, the median revenue per student is zero.)

Table 7 **Range of Coal, Oil, and Gas Tax per ANB - FY 2004**		
	Elementary Districts	High School Districts	K-12 Districts
# of Districts	279	110	55
Lowest $/ANB	$0	$0	$0
Highest $/ANB	$8,619	$14,019	$12,572
# with $0/ANB	60	40	24
% with $0/ANB	65.6%	63.6%	58.2%
Mean $/ANB	$1,124	$1,235	$2,451

Within the group of districts that receive oil, gas and coal revenue, the revenue per student is very unevenly distributed. Figure 4 shows the distributions of revenue per student for the three types of districts. Most districts receive less than half the average revenue per student, while a few districts receive several times the average revenue per student.

Figure 4 Oil, Gas and Coal Tax per ANB - FY 2004
Districts with Revenue

Percent of Mean Oil, Gas, and Coal Revenue Value per ANB

— Elementary Districts   — High School Districts   — K-12 Districts

The maps on the next two pages show the school districts that receive revenue from the oil and gas production tax and the coal gross proceeds tax.

Policy Issues

In some cases, differences in school district mill levies reflect differences in costs. For example, a district that is able to pay lower teacher salaries because of its desirable location may be able to provide the same educational services as another district but with lower mill levies. A rural district may spend more per student on transportation than a more urban district and therefore have higher mill levies.

In other cases, differences in mill levies reflect local decisions about the level of educational services to offer. A district that chooses to spend more than its BASE amount generally will have to levy more mills to pay for the additional spending.

However, to a large extent, the differences in mill levies between districts are due to differences in taxable value per student and non-levy revenue per student.

Differences in taxable value per student and non-levy revenue per student create a situation where taxpayers with equivalent property in different school districts can pay very different amounts to support equivalent levels of educational services. This is true for both homeowners and businesses.

Differences in mill levies that result from differences in taxable value per student and non-levy revenue per student can distort voters decisions about education. Taxpayers in districts with very different taxable value per student and non-levy revenue per student face very different prices for education. In a district with taxable value of $100,000 per student, putting it in the top 10%, a 1 mill increase in school levies would allow the district to spend an additional $100 per student. In a district with taxable value of $10,000 per student, putting it in the bottom 10%, increasing spending per student by $100 would require a 10 mill increase in school levies. Voters may respond differently to equivalent education proposals because they face different prices for education, which depend on the value of property other taxpayers have in the district.

Differences in mill levies due to differences in taxable value per student and non-levy revenue per student can also distort individual and business location choices. Property taxes are part of the cost of having a home or business in a particular location. When the costs of providing public services differ between locations, it is appropriate to have property taxes differ between locations. Similarly, it is appropriate to have property taxes differ between jurisdictions when voters in those jurisdictions have chosen different levels of services. These types of differences allow businesses and homeowners to make appropriate comparisons of the benefits and costs of different locations. Differences in taxable value per student and non-levy revenue per student distort these comparisons by artificially lowering the cost of locating in school districts where taxable value per student or non-levy revenue per student are high and artificially raising the cost of locating in school districts where they are low.

The large differences in taxable value per student and non-levy revenue per student found in Montana create significant differences in mill levies between school districts. This creates significant inequities and distorts individuals' and businesses' decisions. Therefore, the committee may want to consider ways to reduce disparities in mill levies caused by differences in taxable value and non-levy revenue per student.

Issue

Issue 1. Should disparities in school mill levies that result from differences in taxable value per student and non-levy revenue per student be reduced?

Option A: Yes, the committee would like additional information on ways to accomplish this end at a future meeting. Options include, but are not limited to
- Increasing state support for districts with low taxable value and non-levy revenue per student through increased GTBA or another mechanism,
- Bringing unevenly distributed revenue sources to the state to be equalized for all school districts,
- Changing how state support for schools is distributed, with less as direct state aid and more as GTBA.

Option B: No.