# MONTANA LEGISLATIVE BRANCH

## Legislative Fiscal Division

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DATE: April 14, 2008

TO: SJR 31 Subcommittee of the Revenue and Transportation Interim Committee

FROM: Jim Standaert
Senior Fiscal Analyst

RE: Disparities in School Mill Levies

School mill levies vary considerably among school districts. This report shows the extent of those disparities in FY 2008 and how disparities in taxable value per student and nonlevy revenue per student contribute to disparities in mill levies.

## DISPARITIES IN FY 2008 MILL LEVIES

To quantify disparities in mill levies, this report 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 percent 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 percent of districts having a higher levy (the ninetieth percentile) and determining how far it is from the middle of the distribution.

# REQUIRED MILLS AND TOTAL SCHOOL MILLS

School districts are required to spend at least the BASE amount in their general funds, to transport students and to pay retirement costs. Taxpayers in every district pay base property taxes, and countywide retirement and transportation levies. In this report, the sum of mill levies for these purposes will be called required mills.

There are many more school district funds that are funded by levies. For instance, the area of the district general fund above the BASE budget is funded by property tax levies, as are the debt service fund, the bus depreciation fund, the adult education fund, the building reserve fund, and other district funds, as well as county transportation and retirement funds. In addition, taxpayers pay the state 95 mills on their property. The sum of these mills for the purposes of this report are called "Total School Mills".

It should be noted that the levies shown below combine elementary and high school mills. The state has 380 school district taxing jurisdictions in which the school mills levied are the same for every property owner. Some jurisdictions are small, as for instance a K-6 elementary district overlaps with part of a high school district. Some are large, with the elementary boundaries the same as the high school boundaries.

Table 1 shows the highest and lowest mill levy for required mills and for total school mills. It also shows the difference between the highest and lowest levies and the median mill levy. Half the mill levies in the state are above the median mill levy and half are below the median mill levy.

| | Required Elementary and High schools | What District | All School Mills | What District |
|---|---|---|---|---|
| **Table 1** | | | | |
| **Range of Required and Total Mills Mills - FY 2008** | | | | |
| No. of Districts | 380 | | 380 | |
| Highest Mill Levy | 475.2 | Rocky Boy Elem & HS | 1,179.0 | Rocky Boy Elem & HS |
| Lowest Mill Levy | 0.0 | Baker & Lambert Elem & HS | 95.0 | Baker & Lambert Elem & HS |
| Highest - Lowest: Range | 475.2 | | 1,084.0 | |
| Median Mill Levy | 118.1 | Winnifred Elem & HS | 300.7 | Absarokee EL, Red LodgeHS |
| Highest Taxes on $100,000 house | $975 | | $2,418 | |
| Range as Percent of Median | 4.0 | | 3.6 | |
| Median Mills in FY 2005 | 114.7 | | 289.7 | |

Required mill levies and total school mill levies vary widely across the state. The median required mill levy is 118.1 mills and varies between zero and 475 mills. The median total school mills is 300.7 mills and total school mill levies vary between 95 and 1,179 mills. The property taxes in FY 2008 on a $100,000 house at 475 mills is $975 dollars and at 1,179 mills is $2,418 per year. The range as a percent of the median is 4 for required mills and 3.6 for total school mills.

Since FY 2005, median required mills have risen by 3.4 mills and median total school mills have risen by 11 mills. The small change in required mills between FY 2005 and FY 2008 reflects an increase in county transportation and retirement mills and district transportation mills that were

almost entirely offset by reductions in district general fund BASE mills, as a result of more state dollars funding the BASE general fund budget in FY 2008 than in FY 2005. The state raised the GTB subsidy in FY 2008 from 175 percent to 193 percent.

Figure 1A and 1B shows distributions of required mill levies and total school mills in FY 2008. The differences are expressed as percentage deviations from the median. For required mills some districts have mills zero percent of median mills and some districts have mills that are over 200 percent of median mills. The distribution of total school mills is slightly less disparate, with mills at the low end at 30 percent of median mills.



Figure 1A
Required Elem & HS School Mills Distribution - FY2008
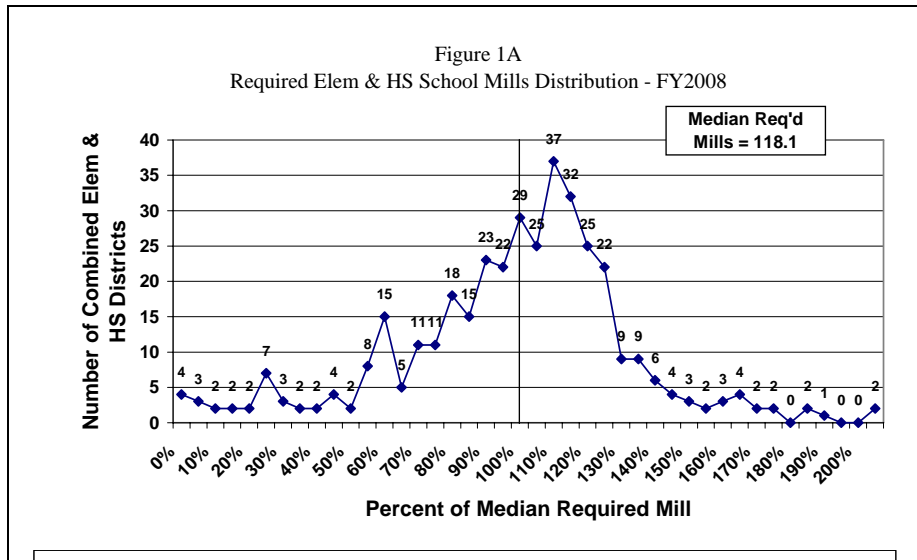
A distribution of mill levies with limited disparities would have a high peak around 100 percent of the median, 2/3rds of the districts within 34 percent of the median, and small tails, or the parts of the distribution far from the median. The distributions of required and total school mills have this general form.
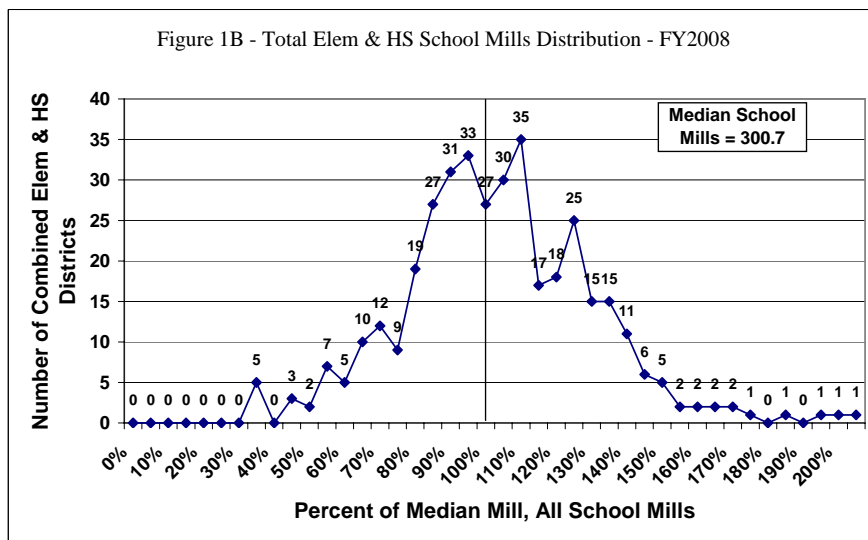


Figure 1B - Total Elem & HS School Mills Distribution - FY2008

| Table 2 | | |
| :--- | :--- | :--- |
| Dispersion of Required and Total School Mills - FY 2008 | | |
| | Required Mills | All School Mills |
| 2/3 of districts have mills within this percent of the median | 26% | 23% |
| 10% of districts have mills at least this percent lower than the median | 32% | 32% |
| 10% of districts have mills at least this percent higher than the median | 35% | 35% |

Table 2 shows 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. The first row shows the measure of how narrow or wide the central peak of the distribution is. It shows that two-thirds of districts have required mills that are within 26 percent of the median. The distribution of total mills is slightly more concentrated around the mean than the distribution of required mills, with two-thirds of districts being within 23 percent 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 percent of districts with the lowest required mills have required mill levies that are at least 32 percent below the median. The distribution of total mills has the same dispersion at the low end as the required school mill distributions.

The third row of Table 2 shows the measure of how far the districts with the highest mills are from the middle. The top 10 percent of districts have required mills and total mills that are at least 35 percent higher than the median.

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

- The difference between the highest and lowest required mill levies is 4.0 times the median levy. The difference between the highest and lowest all school mill levies is 3.6 times the median levy.

- The distribution of both required mills and total mills is less broad than a standard normal distribution, with 2/3rds of the districts within 26 percent and 23 percent of the median. In a standard normal distribution 2/3rds of observations are within 34 percent of the median.

- Only about 10 percent of the districts have required and total mills that are significantly distant from the median mills

## REASONS FOR DISPARITIES IN MILL LEVIES

There are several reasons for disparities in school district mill levies, but the reasons fall into two main types: differences in district revenue capacities and differences in spending. Differences in spending are not addressed in this report.

## Revenue Capacity Differences

Schools receive revenue from property taxes, state and local nonlevy revenue, and state Base aid. It is hypothesized that these sources contribute to geographical disparities in required mills and all school mills. The extent to which these sources contribute to mill disparities will be examined here.

Property tax revenue equals the taxable value of property in a district times 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 nonlevy revenue per student can support the same level of spending per student with less revenue from property taxes, and therefore lower mills.

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, county retirement levies and debt service 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 upper limit on mill levies.

## *Differences in Taxable Value of Property*

The mill disparities shown in figures 1A and 1B are for combined elementary and high school districts. There are 380 such districts in the state in FY 2008. However it is not possible to assign students to each taxpaying district because data is not available on where students in a district live. Because of this, taxable value per ANB must be calculated for each district type, i.e. for elementary districts separately from high school districts.

Table 3 shows the highest and lowest taxable value per student (ANB, or Average Number Belonging) and the median for each type of school district. Note that elementary has been divided into K-6's and K-8's. K-6's may teach students in grades 7 and 8, but have no "OPI approved" middle school program, while those designated as K-8 do have an approved middle school program. Also shown is taxable value per dollar of "GTB area". This is the area of the district general fund budget that is financed by nonlevy revenue, state GTB aid, and Base property taxes. It is shown because this is the

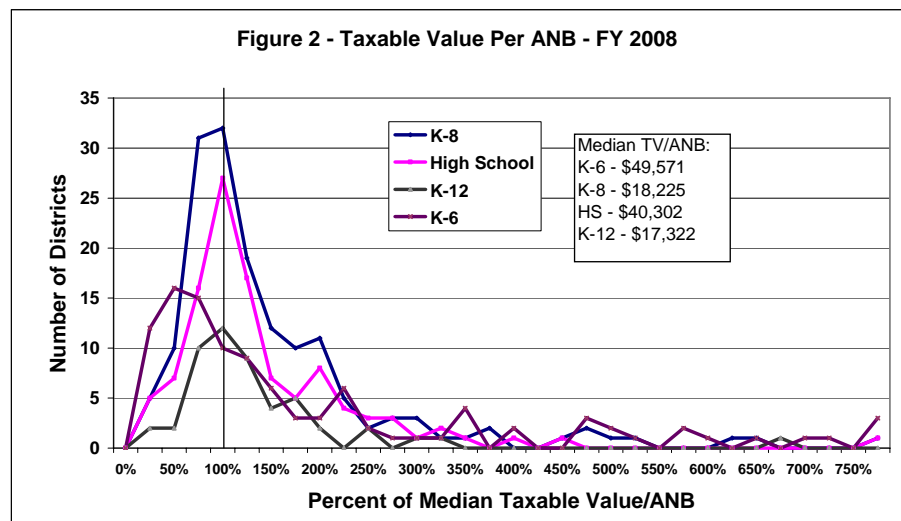| Table 3 Range of Taxable Value per ANB - FY 2008 | | | | |
|---|---|---|---|---|
| | K-6 | K-8 | HS | K-12 |
| # of Districts | 106 | 155 | 109 | 51 |
| Budgeted ANB | 2,698 | 86,918 | 43,020 | 17,521 |
| Average Size | 25 | 561 | 395 | 344 |
| | | | | |
| Lowest TV/ANB | $89 | $196 | $494 | $258 |
| Median TV/ANB | $49,571 | $18,225 | $40,302 | $17,322 |
| Highest TV/ANB | $954,310 | $211,625 | $364,132 | $116,003 |
| Range of Taxable Values per Dollar Financed in GTB Area - FY 2008 | | | | |
| Lowest TV/GTB Area | $0.03 | $0.07 | $0.14 | $0.08 |
| Median TV/GTB Area | $17.23 | $7.25 | $12.44 | $5.06 |
| Highest TV/GTB Area | $315.24 | $77.64 | $109.48 | $42.62 |
| Guaranteed Tax Base | $20.85 | $20.85 | $32.22 | $20.85/32.22 |
| Nonlevy Revenue (Oil,Gas, Coal & HB 124 BG) per ANB - FY 2008 | | | | |
| Lowest Nonlevy/ANB | $0.00 | $3.60 | $7.02 | $5.30 |
| Median Nonlevy/ANB | $394.92 | $291.81 | $381.47 | $469.13 |
| Highest Nonlevy/ANB | $3,051.03 | $3,816.17 | $5,464.79 | $5,662.35 |
| State Base Aid per ANB - FY 2008 | | | | |
| Lowest Base Aid/ANB | $1,618.04 | $2,268.14 | $2,564.94 | $2,702.96 |
| Median Base Aid/ANB | $3,010.03 | $3,173.57 | $4,493.48 | $3,986.77 |
| Highest Base Aid/ANB | $6,805.09 | $4,632.26 | $10,309.05 | $6,582.12 |

area of the budget subsidized by the state by allocating to each district a guaranteed tax base.

The analysis that follows will focus on taxable value per student since it is easier to conceive. Because of the school funding formula, there is <u>almost</u> a 1 to 1 correspondence between taxable per student and taxable value per dollar of GTB area.

The median taxable value per student is $49,571 for K-6 districts, $18,225 for K-8 districts, $40,302 for high school districts and $17,322 for K-12 districts. The largest range in taxable value per student is in the K-6 districts with the lowest district less than $100 per student and highest $954,310 per student (Spring Creek EL in Big Horn County).

To put these numbers in perspective, the median K-6 district has available $49.57 per student per mill levied. The K-6 district with the median required mill levy levies 53.1 mills, providing $2,632 per student in local support for each student. In contrast, the median K-8 district has only $18.23 per student per mill. The median K-8 required mill levy is 80.9 mills, an increase of 52 percent over the median K-6 district, while providing only $1,475 in local required resources. Of course there are several K-6 districts with small tax bases. Of the 106 K-6 districts, 18 have taxable values per student below the $18,225/student median for K-8 districts.

Figure 2 shows the distribution of taxable value per ANB for K-6, K-8, high school and K-12 districts. All distribution are centered around the median for each district type. Note that all distributions have long tails to the left, signifying districts with tax bases that are very wealthy. Note also that for K-6 districts the peak



Figure 2 - Taxable Value Per ANB - FY 2008

Median TV/ANB:
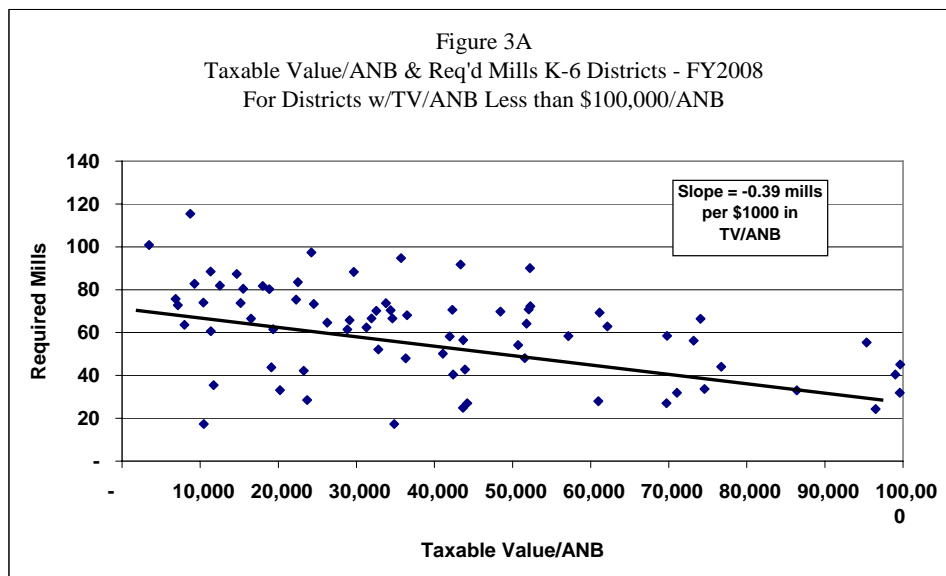K-6 - $49,571
K-8 - $18,225
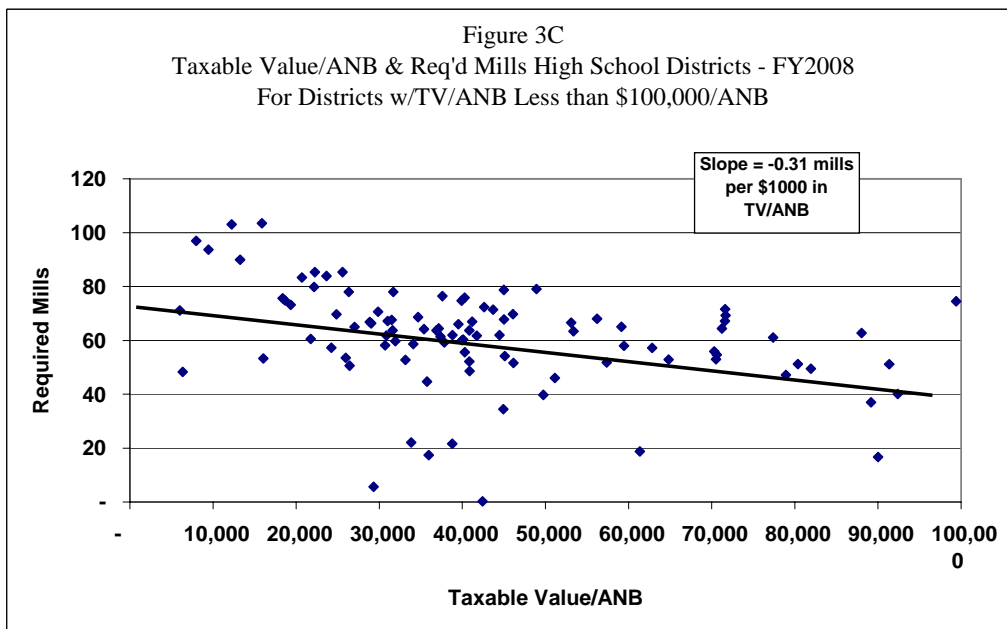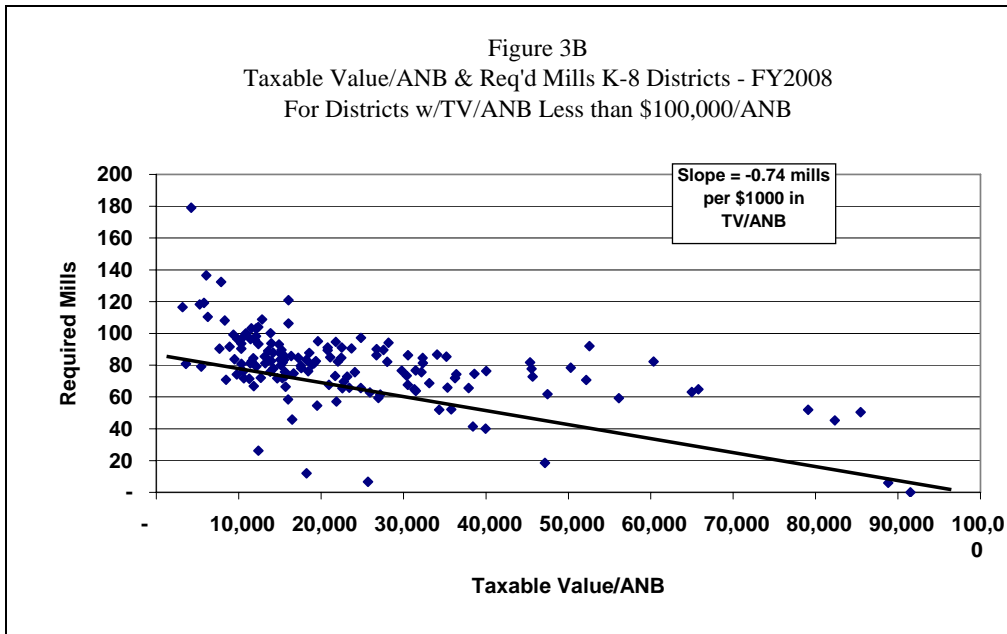HS - $40,302
K-12 - $17,322

number of districts is below the median, indicating there are many less than wealthy districts. However K-6 districts also contain some of the wealthiest districts.

Table 4 shows median mills, highest and lowest mills and the range of mills for each school district type. K-6 and high school districts have the lowest median mills and the lowest range in mills.

| Table 4 Range of Required Mills and Total School Mills - FY 2008 | | | | |
|---|---|---|---|---|
| | K-6 | K-8 | HS | K-12 |
| # of Districts | 106 | 155 | 109 | 51 |
| Budgeted ANB | 2,698 | 86,918 | 43,020 | 17,521 |
| Average Size | 25 | 561 | 395 | 344 |
| | | | | |
| Lowest Required Mills | - | - | - | - |
| Median Required Mills | 53.10 | 80.90 | 61.80 | 92.90 |
| Highest Required Mills | 115.40 | 389.40 | 103.50 | 152.00 |
| | | | | |
| Lowest Total School Mills | 102.40 | 95.00 | 95.00 | 95.00 |
| Median Total School Mills | 168.00 | 241.50 | 199.40 | 275.10 |
| Highest Total School Mills | 287.80 | 796.70 | 495.40 | 419.10 |

Figures 3A, 3B and 3C show the distribution of taxable value per student for K-6, K-8, and high school districts.



Figure 3A
Taxable Value/ANB & Req'd Mills K-6 Districts - FY2008
For Districts w/TV/ANB Less than $100,000/ANB

Figure 3B
Taxable Value/ANB & Req'd Mills K-8 Districts - FY2008
For Districts w/TV/ANB Less than $100,000/ANB



Figure 3C
Taxable Value/ANB & Req'd Mills High School Districts - FY2008
For Districts w/TV/ANB Less than $100,000/ANB

How does taxable value per student correlate with required mill levies? This is shown in Figures 3A, 3B and 3C for K-6, K-8 and high school districts. A regression line is drawn through each set of points. This line "explains" 21 percent of the variation in required mill levies for K-6 districts, 31 percent for K-8 districts and 13 percent for high school districts. Using other explanatory variables, such as the base budget per ANB, state dollars per ANB, nonlevy revenue per ANB and a dummy variable for reservation districts only explains between 40 and 52 percent of the variation in required mills, and between 30 and 35 percent of total school mills for each of the three districts types. Clearly, required mill levies and total school mills vary for reasons in addition to taxable per ANB.
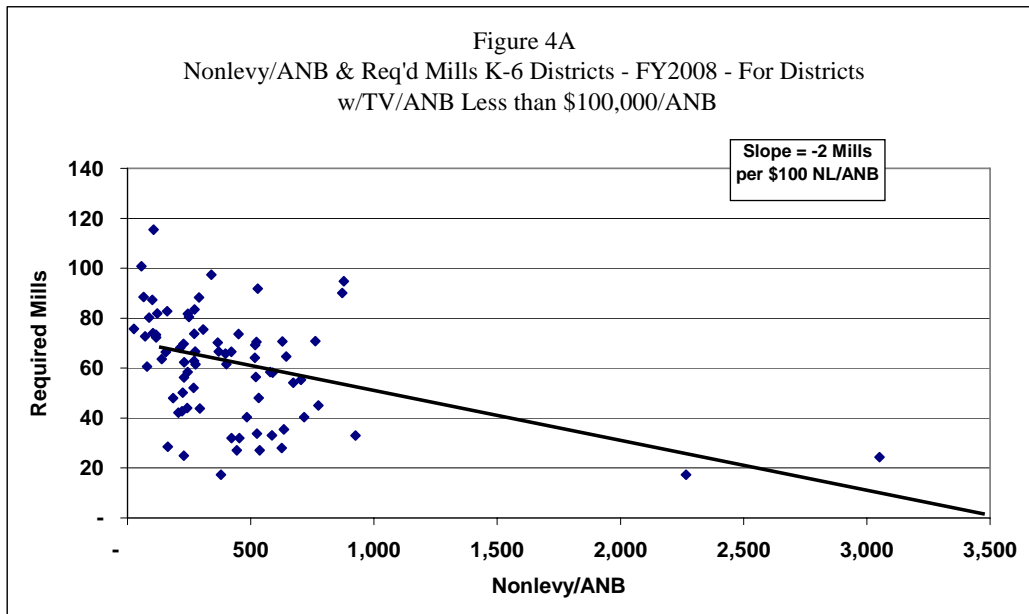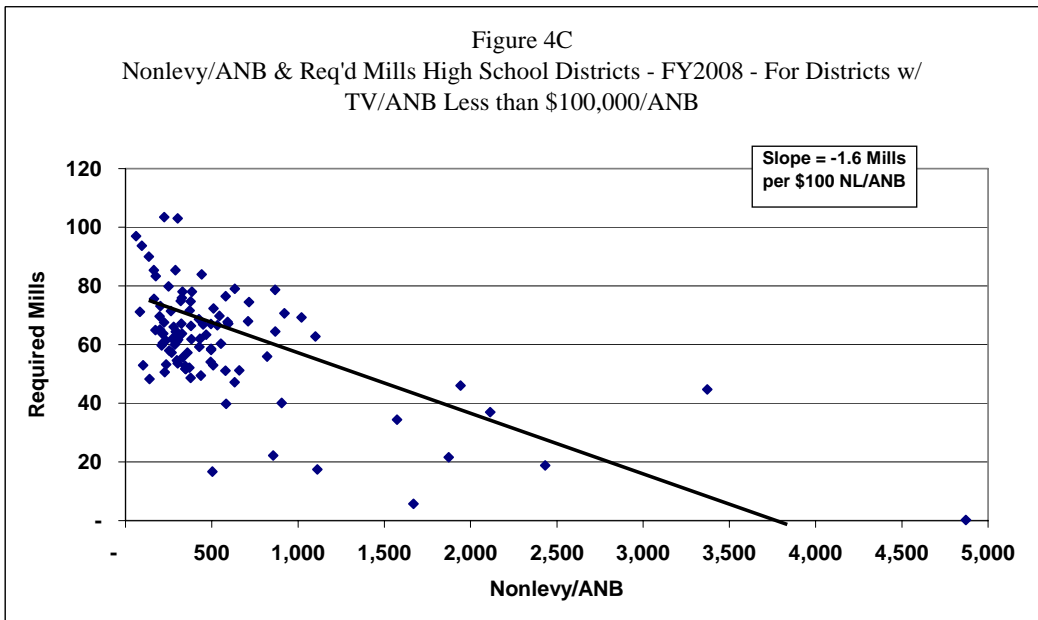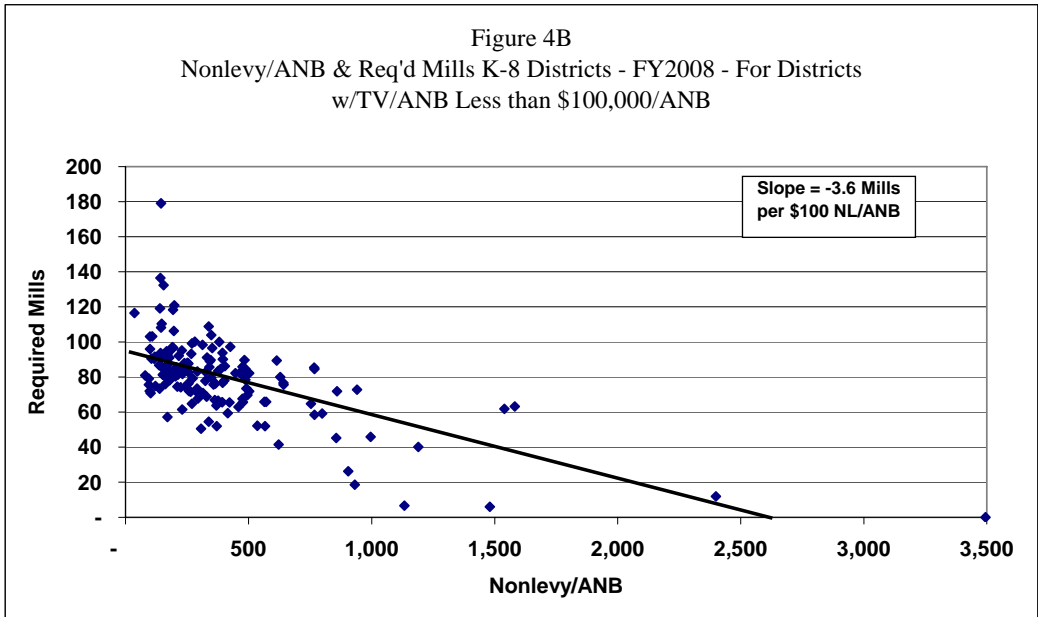
## *Differences in Nonlevy Revenue Per Student*

Table 3 on page 5 also shows differences in nonlevy revenue per ANB for K-6, K-8, High School and K-12 districts. Nonlevy revenue in this case is oil, gas, and coal revenue, and HB 124 block grants. Nearly all districts receive HB 12 block grants but only 67 districts receive oil, gas, or coal revenue.

Districts are required to use nonlevy revenue to offset required mills wherever they can. For instance, in the district general fund, nonlevy revenue first funds the GTB area, then the overbase area. In the transportation fund, nonlevy revenue is taken account of before mills are calculated.

The median nonlevy revenue per ANB is $395 for K-6 districts, $$292 for K-8 districts, $381 for High school districts and $469 for K-12 districts. However this varies substantially between districts. The range between the districts with the highest and lowest nonlevy revenue per student is $3,051 for K-6 districts, $3,813 for K-8 districts, $5,457 for high school districts and $5,657 for K-12 districts.

Figures 4A, 4B and 4C show the dispersion of required mills and nonlevy revenue for K-6, K-8 and high school districts. The lines shown are regression lines that explain the relationship between the two variables. This line "explains"15 percent of the variation in required mills for K-6 districts, 41 percent for K-8 districts and 36 percent for high school districts.



Figure 4A
Nonlevy/ANB & Req'd Mills K-6 Districts - FY2008 - For Districts
w/TV/ANB Less than $100,000/ANB

**Figure 4B**
**Nonlevy/ANB & Req'd Mills K-8 Districts - FY2008 - For Districts w/TV/ANB Less than $100,000/ANB**

Slope = -3.6 Mills per $100 NL/ANB

**Figure 4C**
**Nonlevy/ANB & Req'd Mills High School Districts - FY2008 - For Districts w/ TV/ANB Less than $100,000/ANB**

Slope = -1.6 Mills per $100 NL/ANB

# APPENDIX

The following table shows Required Mills, Total school mills, taxable value per ANB, and nonlevy per ANB for the largest districts in the state.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Taxable Value Per ANB and Nonlevy Revenue Per ANB - Largest Districts in the State FY 2008** | | | | | | | | | | |
| CONAME | LE_NAME | Level | Req'd Local Mills | Total School Mills | ANB | TAX_VAL | TV/ANB | Percent of Median TV/ANB | HB124 BG, GF & Trans | Nonlevy/ANB |
| **Largest Elementaries** | | | | | | | | | | |
| Gallatin | Bozeman Elem | EL | 73.37 | 241.18 | 3,433 | 104,361,792 | 30,400 | 127% | 997,951 | 291 |
| Missoula | Missoula Elem | EL | 95.09 | 269.94 | 5,058 | 99,276,257 | 19,628 | 82% | 1,158,354 | 229 |
| Flathead | Kalispell Elem | EL | 87.74 | 261.45 | 2,593 | 48,161,518 | 18,574 | 78% | 662,693 | 256 |
| Yellowstone | Billings Elem | EL | 82.77 | 259.42 | 10,318 | 157,587,840 | 15,273 | 64% | 3,365,365 | 326 |
| Lewis & Clark | Helena Elem | EL | 93.13 | 287.81 | 5,162 | 76,830,479 | 14,884 | 62% | 1,377,675 | 267 |
| Silver Bow | Butte Elem | EL | 83.11 | 268.50 | 3,194 | 43,423,586 | 13,595 | 57% | 932,037 | 292 |
| Cascade | Great Falls Elem | EL | 85.51 | 243.13 | 7,362 | 97,003,547 | 13,176 | 55% | 1,524,149 | 207 |
| **Largest High Schools** | | | | | | | | | | |
| Gallatin | Bozeman H S | HS | 54.60 | 177.64 | 1,999 | 141,147,897 | 70,609 | 175% | 593,943 | 297 |
| Missoula | Missoula H S | HS | 61.71 | 193.82 | 4,024 | 167,971,605 | 41,742 | 104% | 1,226,459 | 305 |
| Flathead | Flathead H S | HS | 66.04 | 209.91 | 2,583 | 102,065,894 | 39,514 | 98% | 722,006 | 280 |
| Yellowstone | Billings H S | HS | 64.17 | 186.80 | 5,707 | 201,862,127 | 35,371 | 88% | 1,708,227 | 299 |
| Lewis & Clark | Helena H S | HS | 67.18 | 210.09 | 3,104 | 96,262,143 | 31,012 | 77% | 1,006,043 | 324 |
| Silver Bow | Butte H S | HS | 61.80 | 199.31 | 1,567 | 48,347,629 | 30,854 | 77% | 597,766 | 381 |
| Cascade | Great Falls H S | HS | 64.98 | 184.56 | 3,699 | 99,943,212 | 27,019 | 67% | 644,184 | 174 |

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