

**THE MINNESOTA ECOLOGICAL TAX SHIFT:
IMPACT ANALYSIS ON INDIVIDUAL BUSINESSES**

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The Institute for Local Self-Reliance (ILSR) is a nonprofit research and educational organization that provides technical assistance and information on environmentally sound economic development strategies. Since 1974, ILSR has worked with citizen groups, governments and private businesses in developing policies that extract the maximum value from local resources.

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THE MINNESOTA ECOLOGICAL TAX SHIFT: IMPACT ANALYSIS ON INDIVIDUAL BUSINESSES

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The introduction of the Economic Efficiency and Pollution Reduction Act (EEPRA) in the 1996 Minnesota State Legislature prompted a discussion about its impact on Minnesota businesses. This report addresses this question. It does so by assessing the net impact of several types of tax shifts on 23 Minnesota businesses, ranging from neighborhood coffee shops to equipment manufacturers and farmers and paper mills.

A random sample was beyond the scope of this research. Nevertheless, we sought Minnesota firms from as many sectors as possible. Of the firms participating, 9 are manufacturers, 5 are small farming operations and seven are in commercial or retail sectors. Each of the state's leading industrial sectors--industrial machinery and equipment, printing and publishing, fabricated metal products, transportation equipment, and the scientific instruments sector--is represented by at least one firm. The farming operations include dairy, corn, soybeans and hogs.

The limited number of case studies makes definitive conclusions impossible. Nevertheless, we believe this report can inform public policy.

MINNESOTA'S ECOLOGICAL TAX SHIFT

EEPRA imposes a tax on all fossil fuels and nuclear energy and reduces taxes on property and work. The tax in the form of a \$50 fee per ton of carbon burned would raise \$1.5 billion a year.¹ Of that amount, approximately \$870 million would come from the business sector.² The money would be used to reduce existing taxes. Thus EEPRA is revenue neutral. There is no net tax increase on average. Moreover, EEPRA is sectoral neutral. The additional taxes raised from the household sector are returned to the household sector and the additional taxes raised from the business sector are returned to the business sector.

The tax is revenue and sectoral neutral but it has different impacts depending on the kind of business involved. As one would expect, labor or property tax intensive firms would benefit most from the tax and energy intensive firms with small labor forces would benefit least.

¹ The tax raises coal fired electricity, the dominant type of electricity consumed in the U.S. and Minnesota, by 1.23 cents per kWh and raises gasoline and natural gas prices by 13.2 cents per gallon and 81 cents per McF, respectively. Renewable energy sources such as wind and biomass, as well as fuels used in electricity generation, are exempt from the tax.

² To derive the \$870 million we multiplied the percentage of total energy consumption by the business sector by the approximate \$1.5 billion in total revenues raised by a \$50 per ton carbon tax. The business sector consumes about 58 percent of the energy in Minnesota ($58\% \times \$1.5 \text{ billion} = \870 million).

The business sector includes both commercial, industrial, and agricultural businesses. Energy consumption by the business sector was derived from data contained in the 1995 Minnesota Energy Data Book from the Minnesota Department of Public Service. The business sector's energy consumption includes all combustible fuels consumed, electricity, and an allocation of fuels consumed in transportation use.

Transportation fuel consumption for the business sector contained the following allocations: 100% of railroad and vessel diesel use, 100% of jet fuel, 100% of on-highway diesel, 100% on-farm diesel fuel, 15% of on-highway gasoline, 100% of natural gas and LPG used for transportation.

Energy Tax Increase Impact

Most firms surveyed experience a 15-30 percent increase in total energy expenditures.³ Aside from the firm's overall energy use, the relative impact of the carbon tax on energy costs is determined by two factors: electricity consumption and electricity rate (before the tax).

- ***Electricity Consumption***

Because Minnesota heavily depends on coal-fired electricity and coal contains a higher percentage of carbon than other fuels, a carbon tax increases the cost of electricity by a higher percentage than it does on other fuels. Firms that are "electricity intensive" will experience the highest percentage increase in their energy bills.

- ***Electricity Rate***

Electricity rates differ significantly within the business sector. The 23 firms in our case studies paid electricity costs ranging from 3.5 cents per kWh for a large paper mill to 8.7 cents per kWh for a family farmer. Since the absolute tax per kWh is similar, those customers with the lowest electric rates will experience the highest percentage increase.

Payroll and Property Tax Reduction Impact

If the additional energy tax revenue were returned as a reduction in the employer portion of the payroll tax (FICA) it would translate into a 21.8 percent reduction. If the additional energy tax revenue were returned as a reduction on the business property tax, the reduction would be 41.2 percent.⁴ The payroll reduction translates into about a 1.67 percent reduction in overall payroll costs.⁵

Other Business Incentives

Realizing the potential burden a carbon tax could impose on energy intensive businesses even with offsetting tax reductions, EEPRA contains several incentives for such businesses.

- Firms are exempted from paying any additional net tax liability above 1 percent of sales.
- Firms who take advantage of the 1 percent cap must have an in-depth engineering audit of their facilities and invest in those efficiency measures that are cost effective. The state will pay for the audit, which will be done by an independent professional auditor chosen by the business. State financing will be available as a long term loan to pay for the efficiency improvement measures.
- Because the state will pay for the audit and finance efficiency improvements, efficiency investments will not have to compete with other business related ventures for scarce capital. Although efficiency improvements are the driving force behind state financing, experience shows that when businesses invest in energy efficiency they often experience associated improvements in productivity, product quality and reliability and associated cost reductions in waste disposal. In some cases these non-energy benefits may exceed the financial benefits from a reduction in energy use.

³Three manufacturing firms experience a percentage increase greater than 35%, while all five farming operations see a percentage increase of less than 20%.

⁴ The percentage reductions were determined by dividing the \$870 million in new tax revenues from the business sector by the total amount of FICA and property taxes paid by the business sector, respectively.

⁵ This number is calculated by multiplying 21.8 percent by 7.65 percent. This is not a precise figure. For 1996 the social security tax rate is 6.2 percent on the first \$62,700 of the employee's wages. The Medicare tax rate is 1.45 percent on all of the employee's wages.

Table 1: Impact on EEPRA on a Selection of Minnesota Businesses

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |
|----|---|--------------------------------------|------------------------|-----------------------|--|--------------------------------|----------------------------------|---------------------------|----------------------------|---|--|---|--|---|---|------------------|----------------|---|
| 1 | Generic Name | Total Annual Energy Consumption (\$) | Average Cost/ kwh (\$) | Total Wages Paid (\$) | Total Labor Taxes Paid By Employer (FICA \$) | Total Property Taxes Paid (\$) | Total Additional Energy Tax (\$) | Payroll Tax Decrease (\$) | Property Tax Decrease (\$) | Net Benefit/ (Loss) with Payroll Tax Refund | Net Benefit/ (Loss) with Property Tax Refund | Net Benefit/ (Loss) with sliding scale exemption for large energy users, Payroll Tax Refund | Net Benefit/ (Loss) with sliding scale exemption for large energy users, Property Tax Refund | Net Benefit/ (Loss) with 19% cap for large energy users, Payroll Tax Refund | Annual Energy Consumption as % of Sales | Gross Sales | 1% Gross Sales | Annual Energy Consumption as % of Sales |
| 2 | Paper Mill | \$ 18,612,170 | \$ 0.035 | \$ 35,360,000 | \$ 2,705,040 | \$ 2,340,000 | \$ 6,715,424 | \$ 591,727 | \$ 985,035 | \$ (6,123,697) | \$ (5,730,390) | \$ (1,556,842) | \$ (1,475,742) | \$ (2,326,521) | 8% (approx.) | \$ - | \$ 2,326,521 | 0.00% |
| 3 | Equipment Mfg. | \$ 2,471,371 | \$ 0.047 | \$ 69,500,000 | \$ 4,900,000 | \$ 569,000 | \$ 691,575 | \$ 1,071,875 | \$ 239,523 | \$ 380,299 | \$ (452,052) | \$ 192,507 | \$ (494,017) | \$ 90,893 | 0.98% | \$ 251,000,000 | \$ 2,510,000 | 0.98% |
| 4 | Ethanol Plant | \$ 1,692,566 | \$ 0.039 | \$ 689,775 | \$ 51,129 | \$ 201,836 | \$ 585,802 | \$ 11,185 | \$ 84,964 | \$ (574,617) | \$ (500,838) | \$ (144,144) | \$ (128,931) | \$ (245,000) | 6.91% | \$ 24,500,000 | \$ 245,000 | 6.91% |
| 5 | Grocery Store Chain | \$ 1,135,360 | \$ 0.050 | \$ 10,667,291 | \$ 795,074 | \$ 638,686 | \$ 268,336 | \$ 173,922 | \$ 268,858 | \$ (94,414) | \$ 522 | \$ (124,885) | \$ (46,582) | \$ (141,373) | 1.00% | \$ 113,536,961 | \$ 1,135,370 | 1.00% |
| 6 | Insurance Co. | \$ 564,033 | \$ 0.448 | \$ 77,173,225 | \$ 5,494,223 | \$ 1,072,285 | \$ 21,947 | \$ 1,201,861 | \$ 451,384 | \$ 1,179,914 | \$ 429,436 | \$ 969,347 | \$ 350,354 | \$ 855,411 | 0.04% | \$ 1,431,025,428 | \$ 14,310,254 | 0.04% |
| 7 | Printer | \$ 552,911 | \$ 0.054 | \$ 14,155,658 | \$ 980,015 | \$ 242,553 | \$ 129,050 | \$ 214,378 | \$ 102,104 | \$ 85,328 | \$ (26,947) | \$ 47,769 | \$ (44,835) | \$ 27,446 | 1.08% | \$ 51,049,902 | \$ 510,499 | 1.08% |
| 8 | Lens Mfg. | \$ 492,863 | \$ 0.055 | \$ 6,319,345 | \$ 468,108 | \$ 109,634 | \$ 110,815 | \$ 102,399 | \$ 46,151 | \$ (8,416) | \$ (64,664) | \$ (26,357) | \$ (72,750) | \$ (36,064) | 1.38% | \$ 35,753,000 | \$ 357,530 | 1.38% |
| 9 | Equipment Mfg. | \$ 391,784 | \$ 0.052 | \$ 60,282,543 | \$ 4,420,129 | \$ 708,763 | \$ 111,973 | \$ 966,903 | \$ 298,357 | \$ 854,930 | \$ 186,384 | \$ 685,528 | \$ 134,112 | \$ 593,866 | 0.12% | \$ 325,000,000 | \$ 3,250,000 | 0.12% |
| 10 | Hotel | \$ 297,279 | \$ 0.048 | \$ 2,934,209 | \$ 213,386 | \$ 437,433 | \$ 78,594 | \$ 46,678 | \$ 184,140 | \$ (31,916) | \$ 105,546 | \$ (20,047) | \$ 36,642 | \$ (44,519) | 3.62% | \$ 8,215,000 | \$ 82,150 | 3.62% |
| 11 | Sheet Metal Mfg. | \$ 194,163 | \$ 0.059 | \$ 2,114,112 | \$ 161,651 | \$ 21,731 | \$ 42,282 | \$ 35,361 | \$ 9,148 | \$ (6,921) | \$ (33,135) | \$ (9,837) | \$ (26,053) | \$ (16,469) | 2.99% | \$ 6,500,000 | \$ 65,000 | 2.99% |
| 12 | Auto Parts Mfg. | \$ 97,879 | \$ 0.055 | \$ 3,579,709 | \$ 280,753 | \$ 118,620 | \$ 21,579 | \$ 61,415 | \$ 49,934 | \$ 39,835 | \$ 28,354 | \$ 29,076 | \$ 19,606 | \$ 23,253 | 0.97% | \$ 10,141,286 | \$ 101,413 | 0.97% |
| 13 | Plastics Distributor Medium Auto Dealership | \$ 58,559 | \$ 0.054 | \$ 3,683,573 | \$ 257,554 | \$ 95,872 | \$ 12,263 | \$ 56,340 | \$ 40,358 | \$ 44,077 | \$ 28,095 | \$ 34,206 | \$ 21,024 | \$ 28,865 | 0.39% | \$ 15,000,000 | \$ 150,000 | 0.39% |
| 14 | Potato Farmer | \$ 32,175 | \$ 0.061 | \$ 58,421 | \$ 4,469 | \$ 5,930 | \$ 6,101 | \$ 978 | \$ 2,496 | \$ (4,753) | \$ (3,235) | \$ (954) | \$ (641) | \$ (5,017) | 4.36% | \$ 738,139 | \$ 7,381 | 4.36% |
| 15 | Family Farmer | \$ 15,184 | \$ 0.071 | \$ 15,000 | \$ 2,295 | \$ 8,265 | \$ 2,449 | \$ 251 | \$ 3,479 | \$ (1,828) | \$ 1,400 | \$ (190) | \$ 475 | \$ (1,729) | 7.23% | \$ 209,946 | \$ 2,099 | 7.23% |
| 16 | Instrument Mfg. | \$ 12,362 | \$ 0.035 | \$ 320,101 | \$ 25,153 | \$ 12,412 | \$ 4,362 | \$ 5,502 | \$ 5,225 | \$ 1,140 | \$ 863 | \$ 176 | \$ (53) | \$ (345) | 1.03% | \$ 1,200,000 | \$ 12,000 | 1.03% |
| 17 | Small Bank | \$ 11,324 | \$ 0.069 | \$ 574,195 | \$ 37,243 | \$ 16,287 | \$ 3,134 | \$ 8,147 | \$ 6,856 | \$ 5,013 | \$ 3,722 | \$ 3,585 | \$ 2,521 | \$ 2,813 | - | \$ - | \$ - | 0.00% |
| 18 | Family Farmer (3) | \$ 9,392 | \$ 0.070 | \$ 15,000 | \$ 2,295 | \$ 7,227 | \$ 1,448 | \$ 251 | \$ 3,042 | \$ (827) | \$ 1,964 | \$ 60 | \$ 635 | \$ (828) | 7.84% | \$ 119,800 | \$ 1,198 | 7.84% |
| 19 | Family Farmer (2) | \$ 8,958 | \$ 0.868 | \$ 15,000 | \$ 2,295 | \$ 7,248 | \$ 649 | \$ 251 | \$ 3,051 | \$ (28) | \$ 2,772 | \$ 149 | \$ 1,304 | \$ (96) | 3.73% | \$ 240,000 | \$ 2,400 | 3.73% |
| 20 | Small Cabinetry Shop | \$ 7,168 | \$ 0.074 | \$ 226,909 | \$ 17,358 | \$ 3,316 | \$ 997 | \$ 3,797 | \$ 1,396 | \$ 2,800 | \$ 399 | \$ 2,135 | \$ 154 | \$ 1,775 | 1.48% | \$ 484,829 | \$ 4,848 | 1.48% |
| 21 | Small Dairy Farmer Small Auto Dealership | \$ 6,309 | \$ 0.066 | \$ 20,400 | \$ 3,121 | \$ 3,320 | \$ 1,086 | \$ 341 | \$ 1,398 | \$ (374) | \$ 682 | \$ (32) | \$ 404 | \$ (466) | 3.98% | \$ 158,494 | \$ 1,585 | 3.98% |
| 22 | Coffee House | \$ 5,957 | \$ 0.077 | \$ 440,176 | \$ 29,948 | \$ 3,507 | \$ 991 | \$ 6,551 | \$ 1,476 | \$ 5,560 | \$ 486 | \$ 4,413 | \$ 227 | \$ 3,792 | 0.08% | \$ 7,424,551 | \$ 74,246 | 0.08% |
| 23 | | \$ 5,063 | \$ 0.082 | \$ 64,923 | \$ 4,959 | \$ 5,682 | \$ 759 | \$ 1,085 | \$ 2,392 | \$ 326 | \$ 1,633 | \$ 136 | \$ 1,214 | \$ 33 | 1.86% | \$ 272,000 | \$ 2,720 | 1.86% |

RESULTS

Although as noted above, no definitive conclusions can be drawn because of the limited nature of these case studies, several preliminary conclusions can be extracted from Table 1.

- A majority of firms see a net reduction in costs under either the payroll or the property tax reduction scenario. This conclusion is compatible with the findings of the a recent macro economic statewide analysis, which found that more than 60 percent of all production output in the state economy experiences a net cost decrease.⁶
- Firms whose energy expenditures are low compared to their payrolls will experience a net benefit from a tax shift that includes a payroll tax reduction. If the average energy cost increase is 20 percent and the average payroll reduction is 1.6 percent, a firm with a payroll some 12.5 times larger than its energy costs will experience a net benefit.
- If the average energy cost increase is 20 percent and the average property tax reduction is 40 percent, then firms whose energy expenditures are less than twice their property taxes benefit from a tax shift with a property tax reduction.
- Virtually all firms whose energy expenditures are less than 1.5 percent of gross sales benefit more from the payroll tax reduction than the property tax reduction.
- The structure of the tax shift is important. Excluding the 5 agricultural firms, 11 of the 18 firms benefited more from a payroll tax reduction than a property tax reduction. In some cases the differences were very substantial. For example, one large manufacturing firm experiences a net penalty of \$452,052 under a property tax reduction scenario but a net benefit of \$380,299 under a payroll tax reduction scenario. A large printer sees a turnaround from a negative \$26,947 under the property tax reduction to a positive \$85,328 under the payroll tax reduction.

The beneficial impact of a payroll tax reduction is not felt by all firms. Some firms like the paper mill, ethanol plant and the hotel suffer under a payroll tax scenario. The hotel moves from a \$105,546 net benefit under the property tax scenario to a \$31,916 net penalty under the payroll tax scenario.

- Although some manufacturing firms experience significant net penalties as a result of the proposed tax shift, these represent a minority of the manufacturing firms in the sample. Five of the nine manufacturing firms experience a net benefit under a payroll tax refund scenario.
- Four of the five farming operations experience a net benefit from the property tax reduction scenario.⁷ Five have a net loss under the payroll tax reduction scenario, with several having small losses. For farmers, especially family farmers estimating the impact of a payroll tax reduction is difficult because these farmers pay social

⁶ Steve Bernow, Mark Fulmer, Irene Peters, *Carbon Taxes With Tax Reductions*. Executive Summary. Tellus Institute. Boston, MA. January 28, 1997

⁷ Currently liquids used or sold for use on a farm for farming purposes are exempt from federal retail fuels taxes. Minnesota tax codes exempt fuels from sales and use taxes for on farm use or in an agricultural production process. In this analysis we assume that farm fuels are subject to the carbon tax.

security taxes on net income. Net income varies dramatically. In Minnesota between 1987 and 1993 average net farm income varied from \$24,748 in 1989 to \$2,214 in 1993.⁸ Family farmers are considered sole proprietors for tax purposes and pay both halves (employer and employee) of the FICA tax, about 15.3 percent of net income.

To perform the impact analysis in Table 1 for the agricultural businesses we made two assumptions. First, we assumed that every farmer in our case studies except for the potato farmer and the small dairy farmer had a net income of \$15,000 and paid FICA on that. We then gave the farmer a 21.8 percent reduction on the employer portion of the FICA paid. In addition, since family farmers qualify as both self employed and heads of households they will receive tax benefits as households and as businesses.⁹ Thus the family farmers will receive under both the property tax and the payroll tax reduction scenarios a household refund of about \$370¹⁰.

- As we can see from the table, farming is an energy intensive business, with energy to sales ratios ranging from 3.6 percent to 7.8 percent. On the other hand, some of the largest manufacturing operations such as the plastics distributor and the auto parts manufacturer exhibit energy-to-sales ratios of less than 1 percent.¹¹

EVALUATION SCENARIOS

Table 1 contains the data on business impact. The firms are listed in order of their energy use.

Our impact analysis examined four tax shift scenarios(Columns J-N).

- Scenario 1** Return all additional energy tax revenue in the form of a payroll tax reduction on the employer's contribution to FICA.
- Scenario 2** Return all additional energy tax revenue in the form of a property tax reduction.
- Scenario 3** Cap the net increase in taxes paid by any business at 1 percent of its gross sales.¹²
- Scenario 4** Provide partial tax exemptions for businesses whose energy consumption is more than 2 percent of their gross sales. The tax exemptions would increase depending on the energy intensity of the business. A participating business would also see its tax reduction reduced by a comparable percentage. Thus a business with energy costs of 4 percent of its sales would pay only 25 percent of the energy tax and would receive only 25 percent of the tax reductions.¹³

⁸ *Minnesota Agricultural Statistics 1995*. Minnesota Department of Agriculture. Saint Paul, MN, p. 11.

⁹ A typical non farm business owner will also receive a household tax reduction. Unlike the family farmer, however, the business owner will also consume non-business related energy at his or her home or with his or her vehicle. We assume in Table 1 that the family farmer's energy consumption includes household and personal vehicle energy consumption.

¹⁰ The increased tax of \$630 million on the residential sector is returned through an equal payment per household of about \$370.

¹¹ The high-technology industries--electronic equipment, industrial machinery, and scientific instruments--while comprising 56.4% of total Minnesota manufactured exports in 1995, are generally not the most energy intensive industries. Minnesota Department of Trade and Economic Development, 1996.

¹² As with the partial tax exemption, the participating firm must have an independent audit of its facilities and invest in cost effective efficiency improvement projects.

¹³ The participating firm must also have an independent audit of its facilities and invest in those pollution reduction and efficiency improvement projects that the audit suggests are cost-effective.

| <u>Energy as a Percent of Sales</u> | <u>Percentage of Tax Rate</u> |
|-------------------------------------|-------------------------------|
| 2 - 2.99 percent | 75 percent |
| 3 - 3.99 percent | 50 percent |
| 4.0 percent & above | 25 percent |

A FURTHER EXPLANATION OF THE PARTIAL EXEMPTION SCENARIOS

The original EEPRA legislation contained a 1 percent cap on increased net tax liability for firms. If a company's increase in energy taxes less its decrease in business taxes came to more than 1 percent of the firm's gross sales that firm would be exempted from any additional tax liability above 1 percent of gross sales. Four firms in the case studies would be affected by this cap: the ethanol processing plant, two family farmers, and the paper mill. Column N shows the impact on these firms of a partial exemption, assuming their tax benefits were received in the form of a payroll tax reduction.

To evaluate the impact of this cap on other firms we must take into account the impact of a 1 percent cap on the revenue available for tax reductions. If we exempted firms from a tax liability above 1 percent of gross sales the state would experience a reduced revenue stream from energy taxes. To evaluate the impact we relied on data provided to us by the Tellus Institute, which was extracted from the IMPLAN model. The data includes information on total industry output, wages and energy use broken out by economic sector. Based on that data, we estimated a reduction in revenue of \$234 million. This reduces the payroll tax reduction from 21.8 to 15.9 percent and the property tax reduction from 42.1 to 30.7 percent.

We also examined the impact of a partial exemption from the carbon tax for energy intensive businesses, somewhat similar in concept to Denmark's carbon tax legislation¹⁴. The assumptions of Scenario 4 are set out on the previous page. A partial tax exemption would also reduce the amount of energy tax revenue available for tax reductions but in this case the participating businesses also experience a reduction in their tax benefits. Again, we relied on the Tellus data to calculate the net impact on revenues available for tax reductions. Table 2 contains that data.

As we can see from the first row of Table 2, if we reduced by 75 percent the energy taxes on industries with an energy intensity of 4 percent or more, energy tax revenues on a statewide basis would drop by about \$209 million. The firms that qualified for this tax exemption would also lose some \$60 million in tax benefits. The net effect is a reduction of \$148 million in revenue available for tax reductions for other businesses.

The third row of Table 2 reveals that, although there may be firms that spend 2-3 percent of their gross income on energy that would benefit from a partial exemption, most of these firms would benefit from the existing tax shift (i.e. their tax benefits exceed their increased energy

¹⁴ Denmark has a very complex energy tax system that has undergone several revisions since its introduction in 1977. From 1977 - 1992 there was an CO₂ tax on household space heating. In 1993, the CO₂ tax of about \$17 per ton was expanded to include businesses. The residential sector was also subject to a separate energy tax based on the CO₂ content of fuels. Certain businesses were granted a 50 percent rebate on the CO₂ tax. Other industries like electricity generation, shipping, airlines and trains were given a complete exemption. Other energy intensive industries (defined by a ratio of the CO₂ tax to the value added by the business) were given a proportional refund on top of a 50 percent automatic reduction. Loopholes in the Danish system resulted in major changes in 1995. The new scheme will allow revenue to be returned to both residents and businesses to be used for energy efficiency improvements. The 1995 reform of the energy tax system resulted in a different classification system for the "energy intensity" of businesses. It significantly lowered the number of businesses that could claim more than 90 percent exemption from the tax. Denmark defined industrial production processes as heavy, light, or room heating. Those businesses with heavy production processes can be exempted from the tax only if they invest in energy efficiency improvements with four-year paybacks. Those firms who don't will see their energy tax rise to the residential level by the year 2000.

taxes). If they received a partial exemption the result would be a reduction in their tax benefits greater than a reduction in their increased energy taxes. Therefore we assume they would not opt for a partial exemption.

Table 2: Net Revenue Reduction From Partial Exemption

| Sliding Scale Exemption | Decrease in Energy Tax Revenue (million \$) | Reduction in Tax Benefits (million \$) | Net Tax Effect (million \$) |
|--------------------------------|--|---|------------------------------------|
| 75% Exemption- (4% or more) | \$209.1 | \$60.8 | \$148.3 |
| 50% Exemption - (3-3.99%) | \$18.2 | \$14.5 | \$3.7 |
| 25% Exemption - (2-2.99%) | \$42.8 | \$155.9 | (\$113.1) |

For firms that spend over 3 percent of their gross income on energy, the average firm would benefit from a partial exemption and we assume it would opt to participate. The result is a reduction of \$152 million in overall revenue available for tax reductions, from \$867 million to \$715 million. This would shrink the tax reduction on the payroll side to 18.04 percent and on the property tax side to 34.7 percent.

Columns J-N estimate the net benefit or loss to the firms in our sample under all four scenarios. Columns L and M provide information on the impact of firms under a partial tax exemption and Column N provides information on the impact under a 1 percent cap, assuming a payroll tax refund.

As we can see, companies that consume a great deal of energy, like the paper mill and the ethanol plant, would still experience an increased tax liability even with a 1 percent cap or a partial exemption. However, their tax liability is significantly reduced, being cut by 60-70 percent for the paper mill and by 60-75 percent for the ethanol plant. Both facilities fare better under the partial tax exemption than under the 1 percent cap.

As expected, those firms that do not qualify or opt into the partial tax exemption or the 1 percent cap will see their tax benefits somewhat reduced because of the loss of revenue generated from the energy intensive firms. Since the loss of statewide revenue is significantly greater under the 1 percent cap than under the sliding scale partial exemption, the reduction in benefits or the increased liability for the other firms is significantly greater under the 1 percent cap scenario.

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