## RESTRUCTURING MINNESOTA'S TAX SYSTEM: TAXING POLLUTION RATHER THAN WORK AND INVESTMENT

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Testimony Before the Minnesota House of Representatives Committee on Taxes

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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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## RESTRUCTURING MINNESOTA'S TAX SYSTEM: TAXING POLLUTION RATHER THAN WORK AND INVESTMENT

My name is David Morris. I am a resident of Saint Paul and co-founder and Vice President of the Institute for Local Self-Reliance, a 21 year old nonprofit research organization based in Washington, D.C. and Minneapolis. I come before you wearing another hat as well. I am a board member of Minnesotans for an Energy-Efficient Economy. I am the author of several books on energy policy and have written over two dozen technical reports. Those most relevant to this proceeding are: *Making the Polluter Pay: The Case for a Minnesota Carbon Tax* and *Green Taxes*.

I congratulate this Committee for holding these hearings. In recent years there has been increasing interest in using pollution taxes to restructure national and state tax systems. Two factors are responsible for this interest. First, the recognition that current tax systems make economies less efficient. Second, the recognition that the prices we pay for goods and services do not reflect their full environmental costs and that these environmental costs are not trivial.

Economists increasingly embrace the proposition that our tax system perversely raises the price of "good" economic activities like investment and employment that we would like more of, while we keep low the price of "bad" economic activities, like pollution, that we would like less of.

In Europe, where there are strong environmental political parties and high unemployment, pollution taxes coupled to an overall restructuring of the tax system is receiving very serious attention and support. Several European countries have begun to introduce tax shifting measures. In mid 1993 European President Jacques Delors publically declared his support for taxing natural resources and reducing taxes on labor. And just a few weeks ago eight of the ten largest corporations in Sweden, in an audience with Prime Minister Ingvar Carlsson, requested that a dramatic shift in Sweden's tax structure toward environmental taxes.

From what I understand, Prime Minister Carlsson asked these corporations whether they represent all of Swedish industry. They responded that they might not represent the energy and resource intensive and polluting industries of the past but they definitely represented the labor and knowledge intensive and non-polluting industries of the future.

In the United States the conversation about tax shifting is more muted. But here too there is interest in the concept. The Ford Motor Company and the GAP clothing chain supported a carbon tax introduced a year ago in California that would have replaced a portion of the state's retail sales tax. The new Republican majority in the U.S. Congress is proposing that we restructure our tax system toward taxes on consumption. Pollution taxes are a type of consumption tax.

Economists have long agreed that as presently structured our tax system penalizes work, savings and investment. As we raise taxes on labor and capital we tend to reduce productivity and overall economic activity. Studies disagree on the extent to which this is true but they agree on the overall direction of the impact. For example, several studies found that for every 10 percent rise in state and local taxes on labor there is about a 4 percent decline in

employment .¹ Other studies found that if tax rates on investment income are raised 10 percent savings also falls by about 4 percent.

Economists have a fancy phrase for this effect, "marginal excess burden of taxes". That is defined as the additional loss of private income due to reductions in work effort and investment. Most studies find that this loss is in the range of 30 cents on the increased tax dollar.

While economists find that our present tax system raises the price of "goods" they also increasingly agree that our present pricing system underprices "bads" like pollution and resource inefficiency. When we buy a gallon of gasoline or a kilowatt-hour of electricity or purchase any product we are not paying the full environmental cost of extracting and processing that product and disposing of it. Internalizing these real environmental costs into the prices of these products can encourage businesses and households to become more efficient. For after all, pollution is a sign of inefficiency and wastefulness. As the late Buckminster Fuller once observed, "Pollution is nothing more than an unharvested resource".

Increasing numbers of economists favor substituting pollution taxes for taxes on labor or income as a way not only to reduce pollution but to make the economy more efficient. An analysis by the World Resources Institute suggests substituting \$100 billion of environmental taxes for a mix of current federal taxes yielding the same revenue might generate \$40-60 billion yearly in additional real income.<sup>2</sup>

A number of economic studies have examined the overall impact of tax shifting. These analysis have assessed the overall impact of environmentally based tax shifting on the U.S. economy, on the European economy and on several national economies within Europe.

These studies' conclusions vary significantly depending on the kind of economic forecasting model used as well as the kind of tax shifting proposed.<sup>3</sup> Some models conclude that the greatest positive impact comes from offsetting pollution taxes with reductions in taxes on investment. Others believe that the greatest positive impact comes from reducing taxes on labor. Virtually all models conclude that a significant pollution tax would reduce future pollution and fossil fuel use.

To give an example of the results from one of these models, the Danish government examined the impacts on their economy from increasing their existing carbon dioxide tax by about \$25 per ton. This analysis might be relevant to Minnesota because Denmark has a gross domestic product about 20 percent larger than that of Minnesota and is heavily involved in international and intra-European trade. The Danes concluded that if the revenue generated by the carbon dioxide tax were returned through income tax reductions the result would be a loss in production and a rise in unemployment. But if the revenue generated were returned by reducing business' social security reductions employment would increase by some 4,000 jobs in the short run and production would modestly increase as well.

Table 1
Effects of a \$25.50 per ton increase in Denmark's CO2 tax on the Danish Economy

Returned through income tax reductions

	1997	2001	2005	Long
Employment ('000s)	0	-8	-1	0
Production (%)	-0.1	-0.5	-0.2	-0.2

### Returned through employer social security reductions

	1997	2001	2005	Long
Employment ('000s)	2	4	3	0
Production (%)	0.1	0.2	0.1	0.2

### How High Should Pollution Taxes Be?

To date environmental taxes in Minnesota have been used or proposed for the purposes of revenue generation, not tax restructuring. For example, the Minnesota Solid Waste Tax raises about \$25 million a year. In April 1992 State Senator Steve Morse introduced a bill to impose a \$6 per ton carbon tax and raise about \$150 million a year. The bill was re-introduced a year later with a modified tax of \$2 per ton, which would have raised about \$50 million a year.

Tax shifting demands that we embrace a much higher environmental tax. It should be a tax high enough to conceivably change behavior in a way that reduces pollution while not being so high that the public sector becomes dependent on pollution for its revenue. Clearly if pollution taxes are effective, in later years the quantity of pollution will stabilize or decline. Most tax restructuring efforts in the U.S. and Europe propose environmental taxes that replace 5-15 percent of the existing total tax revenues.

For Minnesota this percentages would translate into pollution taxes that generate about \$1 billion in annual revenue. This revenue could displace about 5 percent of the current total state and local taxes<sup>5</sup>.

Happily, we can justify this \$1 billion environmental tax figure as being consistent not only with efforts elsewhere but conservative recent estimates of the true costs of pollution in Minnesota. In 1993 the Minnesota legislature required the Public Utilities Commission(PUC) to quantify the environmental costs associated with electric power production. In February 1994 the PUC established interim figures. Currently a contested case proceeding is going on before an Administrative Law Judge. That hearing, which includes expert testimony and cross-examination of witnesses, will be concluded by May. The PUC is expected to approve final environmental cost figures by the fall.

The PUC proceedings will provide a wealth of expert data on environmental cost accounting. By statute the PUC will apply its final pollution cost figures only to the electricity generation sector. But from an overall economic perspective, the environmental costs quantified by the PUC should be applied to all economic activities within the state. As Table 3

shows, if this were done we would discover that only about 25 percent of the total pollution cost falls on electricity producers. Almost half is borne by the transportation sector.

Table 2
Pollutants Generated By Sector<sup>7</sup>
(Percent)

Sector CO	SOx	VOC	PM	NOx	$CO2^8$	Mercury <sup>9</sup>	
Transportation	70.0	4.8	30.1	21.6	38.7	31.8	$n/a^{10}$
Industry	7.6	15.2	46.6	34.4	3.2	11.3	2.0
Electricity	1.0	68.0	2.0	5.0	36.0	34.6	35.0
Space/Water Heating	6.5	11.8	2.0	20.9	20.4	19.3	n/a
Miscellaneous	14.9	0.2	19.3	18.1	1.7	3.0	$63.0^{11}$
Total: 100	100	100	100	100	100	100	

n/a indicates not available

Table 3
Pollution Cost Generated By Sector In Minnesota<sup>12</sup>
(Percent)

Sector	Percent
Transportation	44
Industry	10
Electricity	26
Space/Water Heating	14
Miscellaneous	6
Total:	100

The estimates of the cost of pollutants provided by the experts in the PUC proceeding vary dramatically. Assuming these costs are applied to pollutants generated statewide, the aggregate cost estimates vary from a few hundred million dollars a year to several billion dollars. For purposes of this discussion, I use the cost estimates proposed by the Minnesota Department of Public Service. The DPS estimates are on the low end of those proposed by other expert witnesses in the PUC proceeding and are conservative compared to the costs of pollution used by regulatory agencies in several other states.

The DPS environmental externality estimates, if applied statewide to all pollution regardless of the generating source, would come to about \$1.1 billion.

Table 4
Statewide Cost Of Pollution Using Department
Of Public Service Mid-Range Externality Values

(millions of dollars)

Pollutant <sup>13</sup>	<b>Total Cost</b>
VOC	\$437
PM-10	\$138
NOx	\$29
CO2	\$494
Total:	\$1,098

A pollution tax could be imposed on each pollutant generated. However, as Table 4 reveals, almost 50 percent of the pollution costs are generated from the burning of carbon. Thus it might be administratively simpler to impose an across-the-board carbon or carbon dioxide tax. A tax of \$50 per ton of carbon or about \$15 per ton of carbon dioxide emitted would raise \$1.1 billion.<sup>14</sup>

Table 5 Externality Cost By Pollutant In Minnesota<sup>15</sup> (Percent)

Pollutant	<b>Percent of Total</b>
СО	21
SOx	11
VOC	3
PM	12
NOx	28
CO2	23
Mercury	2
Total	100

### A Possible Tax Restructuring Plan

The \$1.1 billion in pollution taxes would replace about 5 percent of total state and local tax revenues. The revenue from the pollution taxes would be used to reduce other taxes. It is important to emphasize that this is a revenue neutral process. We are not proposed to increase overall taxes but rather to change the kinds of economic activities we tax. What kinds of tax reductions we propose to offset the increased pollution taxes depends on the relative weight we give to equity and efficiency concerns.

For purposes of this hearing, the following is proposed. A reduction by 30 percent in workers' compensation payments by industry. A reduction of about 30 percent in commercial/industrial property taxes. A reduction of about 15 percent in residential property taxes. And an elimination in state income taxes for families earning less than \$20,000 a year.

# Proposed Action Cost 30 Percent Reduction in Workers' Compensation Payments \$300 million 30 Percent Reduction in Commercial/Industrial Property Taxes \$300 million Elimination of State Income Taxes for <\$20,000 family income \$200 million 15 Percent Reduction in Residential Property Taxes \$300 million

This type of tax restructuring may not be entirely fair for low income Minnesotans. Pollution taxes tend to be regressive. They fall more heavily on low income households. Energy use is a good surrogate for pollution and poor households spend more than 15 percent

of their income on energy while households earning over \$50,000 a year spend less than 3 percent.

A \$50 per ton carbon tax would increase annual taxes by \$359 on a low income household in Minnesota. Assuming 514,000 low income households in Minnesota, the amount generated by a \$50 per ton carbon tax from low income households throughout Minnesota would be \$185 million. The \$200 million used to eliminate state income taxes for lower income households would not be useful for those households that pay no tax.

Table 6 Impact of a \$50 Per Ton Carbon Tax on Low Income Households

Fuel	Annual Consumption	Additional Tax
Gasoline	655 Gallons <sup>16</sup>	\$101.00
Electricity	7505 kWh <sup>17</sup>	\$125.00
Natural Gas <sup>18</sup>	160 Mcf <sup>19</sup>	\$133.00
Total		\$359.00

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Thus we need to find a way to compensate the very poorest members of the community for the increase in their cost of living due to pollution taxes. One way to do this might be to invest much more heavily than we now do in energy conservation programs for this sector.

As of 1991 low income energy efficiency programs in Minnesota were serving about 20,000 homes per year, although by far the largest amount of spending was used for the 10,000 homes served by the weatherization program. At current rates, the weatherization program would need 50 years to serve all low income households. To date low income energy efficiency programs have found it difficult to even keep up with the increased number of households in need.

Assuming a \$2,000 investment per home, \$75 million from the pollution tax would serve an additional 37,500 homes per year. In addition to existing low income programs, this would allow the entire low income household population to be served within about 10 years. Each household would reduce heat, electricity and water expenditures by \$100-200 per year or more.

This exercise offers a glimpse into the opportunities for tax restructuring based on pollution taxes. The next step for the legislature and the executive branch is to evaluate the impact of various types of tax restructuring. State agencies have the computer modelling capacity to do this. They can determine which types of tax restructuring and what levels of pollution taxes can generate the largest increase in economic efficiency while holding harmless the low income sector of the state.

### **Industrial Competitiveness**

Whenever pollution taxes are suggested an immediate and reasonable first question is, "How will they affect state industries?". There are two responses to this question. First, pollution taxes can be designed in such a way as to protect existing state industries that are engaged in export and could be adversely affected by such tax increases. Second, the rapidly growing industries of today are knowledge and labor intensive. They will be far less concerned about a pollution tax than they might be a high personal income tax or a high commercial property tax. Thus if pollution taxes are used to offset these other forms of taxes, the new tax structure of the state can generate the same amount of revenue as before while making the state more attractive to the types of companies that will be most competitive in the future economy.

No matter how well-designed environmental taxes are they will have winners and losers. Nevertheless, pollution taxes can and have been designed so as to minimize their adverse impact on domestic industry. For example, to cope with competitiveness issues European nations either exempt heavy industry from carbon taxes or create a two tiered structure for business and households. In 1991 Sweden introduced a \$37 per ton tax on carbon dioxide emissions. Energy intensive industries were exempted. Household and non-manufacturing industries paid rates four times higher on average than mining, manufacturing and agriculture industries.<sup>20</sup>

In 1992 Denmark introduced a carbon dioxide tax. The charges are twice as high for households as for businesses: \$14.23 per ton of CO<sub>2</sub> vs. \$7.11. To protect its industry, Denmark goes even further by offering refunds to energy intensive businesses. For firms engaged in export, refunds of the tax are possible depending on the ratio of the tax relative to the value added in production. For industries where the tax amounts to more than 3 percent of the value added, a total tax refund is possible. However, Denmark permits such refunds only if "reasonable" energy efficiency investments are undertaken. These investments must be specified in energy audits carried out by consultants certified by the Danish Energy Agency.<sup>21</sup>

Finland and Denmark also have a cap on the amount of carbon taxes a firm that competes internationally must pay.<sup>22</sup>

Table 7: Carbon Dioxide Taxes in Europe as of January 1, 1994

Country	Tax per Ton of Carbon Dioxide	Effective Date	Exceptions	Comments
Denmark	<b>Households/Public</b> \$14.23/ton	May 5, 1992		CO2 taxes shown are part of an integrated CO2 and energy tax system. The introduction of the CO2 tax
	Industry/Commercial \$7.11/ton	January 1, 1993	For energy-intensive industry, refunds up to 100% if reasonable conservation projects have been carried through.	in 1992 was accompanied by a small reduction in energy taxes. The industrial and commercial sectors are exempted from ordinary energy taxes.

Finland	\$4.00/ton	January 1, 1990 revised several times	<ul> <li>Products used as raw materials in industrial production.</li> <li>Fuels in overseas planes and ships.</li> </ul>	Tax rate for motor fuels is larger than if it were proportional to carbon content.
Netherlands	\$2.35/ton	January 7, 1992	Non-energy uses and international sea/air traffic.	Previous general environmental tax restructured to 50% CO <sub>2</sub> and 50% energy-based.
Norway	Gasoline: \$44.68/ton Mineral Oil: \$20.04/ton Natural Gas: \$44.68/ton Coal: \$17.23/ton	January 1, 1991 coal: 1/7/92 revised several times	<ul><li>Fuels in all air and sea transport.</li><li>Coal used as input to industrial processes.</li></ul>	Increases in the CO <sub>2</sub> tax rate on mineral oils in January 1993 were offset by an elimination of the basic tax rate for mineral oil.
Sweden	Residential \$36.68/ton Industry \$9.42/ton	January 1, 1991 revised several times	Cap on total energy- intensive industrial CO <sub>2</sub> and energy taxes paid: • Electricity sector • International sea and air traffic • Biofuels • Ethanol	There also is a CO <sub>2</sub> tax on fuel used in domestic air traffic.

Source: International Energy Agency, Climate Change Policy Initiatives - 1994 Update (Volume 1, OECD Countries)

### Conclusion

Pollution taxes are an idea whose time has come. Nations are discovering that their existing tax systems undermine economic efficiency and encourage pollution. By raising the cost of resource inefficiency and lowering the cost of investment and employment, states and nations can encourage high productivity, higher employment and lower pollution. Minnesota has been in the forefront of creative thinking not only in the environmental sector but in the tax sector. Now it needs to put its collective thinking cap on and design a tax system that encourages economic efficiency and environmental protection.

We can and should engage in a statewide discussion about the kinds of pollution taxes and the kinds of tax reductions we should favor. In some respects, we have the capacity to look before we leap. We can use our modelling and analytical capabilities to evaluate the impact of various types of environmentally based tax shifting proposals. We should use that capability to inform the statewide discussion and then, perhaps in the next legislative session, introduce legislation that reflects the outcome of this analysis and this discussion.

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### **NOTES**

<sup>1</sup> See Timothy Bartik. *Who Benefits from State and Local Economic Development Policies?* W.E. Upjohn Institute for Employment Research. Kalamazoo, MI. 1991.

<sup>2</sup> Robert Repetto, et. al. *Green Fees: How a Tax Shift can Work for the Environment and the Economy.* World Resources Institute, Washington, D.C. November 1992.

- <sup>3</sup> See for example, Stefan Bach, et. al., "Ecological Reform Even If Germany Has To Go It Alone", Economic Bulletin, German Institute for Economic Research. July 1994; Lawrence H. Goulder, Environmental Taxation and the 'Double Dividend': A Reader's Guide. October 1994; Taxation, Employment and Environment: Fiscal Reform for Reducing Unemployment. European Commission. Brussels. December 1993; Robert Shackleton, et. al., The Efficiency Value of Carbon Tax Revenues. EPA Draft November 5, 1992; Patrick G. Welle, et. al, Economic Benefits of Reducing Toxic Air Pollution: A Minnesota Study. Minnesota Pollution Control Agency. Draft. July 1992; Peter B. Sorenson, et. al., Taxation, Pollution, Unemployment and Growth: Could There Be a 'Triple Dividend' from a Green Tax Reform? Working Paper. Economic Policy Research Unit. Copenhagen Business School; Ian W.H. Parry, Pollution Taxes and Revenue Recycling, Working Paper. Economic Research Service. U.S. Department of Agriculture, April 1994. IA. Lans Bovenberg and Ruud A. de Mooij, Green Policies in a Small Open Economy. CEPR Discussion Paper No. 785. 1994; Studies on Energy Taxes, Energy Information Administration. U.S. Department of Energy. Washington, D.C. April 1991; Lorenz Jarass and Gustav M. Obermair, More Jobs, Less Pollution: A Tax Policy for an Improved Use of Production Factors. Workshop on Transatlantic Fiscal Reform and the Environment. Amsterdam. June 6, 1994; Liesbeth Bakker and Arie N. Bleijenberg, An Ecological Tax Reform in Germany: A Study on the Economic Effects of a Shift in Tax Burden from Labour to Energy., Delft, Netherlands. March 24, 1992.
- <sup>4</sup> Some background on the Minnesota carbon tax experience. The Minnesota legislature in 1990 requested a report from the Pollution Control Agency(PCA) and the Department of Natural Resources on carbon dioxide emissions in Minnesota and incentives to reduce them. In 1991 the legislature formally established a tree planting program, Minnesota ReLeaf and requested a further report from the PCA with an implementation plan and recommendations for a fee structure. The PCA recommended a 54 cents per ton of carbon tax to generate revenues for tree planting. In 1992 Senator Morse's bill called for a \$6 tax per ton of carbon emissions. In 1993 a similar bill called for a \$2 per ton tax on carbon, which would have raised about \$50 million statewide per year. For further discussion of Minnesota green taxes see David Morris, *Green Taxes*. Institute for Local Self-Reliance. Minneapolis, MN. July 1994.

<sup>5</sup> This includes payments from the federal government to the state.

<sup>7</sup> The American Almanac 1993-94, p. 225

<sup>9</sup> Strategies for Mercury Control in Minnesota. Minnesota Pollution Control Agency, Mercury Task Force. 1994, p. 17.

<sup>11</sup> Major components include volatilization from latex paint, landfills, and Municipal Solid Waste Combustion.

<sup>&</sup>lt;sup>6</sup> Laws of Minnesota. 1993. Chapter 356. Section 3.

<sup>&</sup>lt;sup>8</sup> Carbon Dioxide Budgets in Minnesota and Recommendations on Reducing Net Emissions with Trees. Report to the Minnesota Legislature. Minnesota Department of Natural Resources. Division on Forestry. St. Paul, MN. January 1991, p. 15

<sup>&</sup>lt;sup>10</sup> Some mercury is released from transportation sources but has not been measured. *Mercury Atmospheric Processes: A Synthesis Report.* Expert Panel on Mercury Atmospheric Processes. September 1994, p. 4.

<sup>13</sup> The DPS did not offer values for CO, SO2, Mercury, and Lead.

<sup>14</sup> To translate the tax on a ton of carbon to carbon dioxide divide by 3.67.

<sup>15</sup> The costs were determined by taking the average cost proposed by all the expert witnesses in the PUC proceeding.

<sup>16</sup> Average fuel efficiency in 1990 was 16.5 miles per gallon and average annual vehicle miles driven was 10,800. Minnesota Department of Transportation.

<sup>17</sup> Northern States Power Company. 1991 Annual Report.

<sup>18</sup> Non-electric.

<sup>19</sup> The average household gas usage for Northern States Power Company customers in 1991 was 122 MCF. 1991 Annual Report. The average usage for Minnegasco customers was 130 MCF in 1991. Personal conversation with David Kostik. Minnegasco.

<sup>20</sup> For example, coal is taxed at \$97 per ton for households versus \$24 per ton for business and

natural gas at \$82 per 1000 cubic meters versus \$21 for business.

<sup>21</sup> Climate Change Policy Initiatives. 1994 Update Volume 1. Organization for Economic Cooperation and Development. Gross revenues of DKK 2.7 billion were projected. Refunds to energy intensive businesses reduced net revenue to 0.7 billion. The way the Danish carbon dioxide tax is handled is similar in some respects to the way Minnesota's Conservation Improvement Program is handled by Minnesota Power(MP). By state law, regulated Minnesota electric utilities must invest at least 1.5 percent of total revenues in energy conservation. Because only a handful of industrial customers account for over half of MP's electricity sales, MP has developed the Industrial Conservation Project(ICP), a unique program to serve its large customers. MP deposits 1.5 percent of its sales to these customers in a special account. Large customers can use this account to finance energy efficiency programs. Thus, for example, a customer that purchases \$1,000,000 per year in electricity from MP will have deposited \$150,000 per year in its energy conservation account. The ICP contains carryforward and carry-back provisions which allow participants to design larger projects or leverage capital more effectively to implement improvements. Large power users can carryforward 1992 and 1993 allocations into 1994 but must spend the three-year budget by the end of the third year, 1994. 1993-1995 allocations must be used by December 31, 1995. Participants can also carry-back up to five years of future allocations, therefore aggregating 5 years of conservation investments in a single project. The energy efficiency plan must be approved by MP and the Department of Public Service based on an extensive cost-benefit analyses. MP will allow funds to be used to make industrial process changes that can save thermal as well as electric energy. If large industrial customers do not use the funds in their account the funds revert to the MP's general Conservation Improvement Program fund. In some respects, the MP plan constitutes a forced energy savings program.

<sup>22</sup> A carbon tax introduced into the Maryland House of Delegates in 1992 included a tax cap of

\$250,000 per enterprise regardless of whether the business were engaged in export.

<sup>&</sup>lt;sup>12</sup> Based on the medium values proposed by the participants in the PUC contested case hearing.