

Environmental Tax Shifting in Massachusetts

**Taxes that
Work for Our
Environment
and the
Economy**



Acknowledgements

Many thanks to the W. Alton Jones Foundation and the Merck Family Fund for their support of our work on Environmental Tax Shifting. Thanks also to Friends of the Earth, the Center for a Sustainable Economy, and Redefining Progress for sharing information and for their efforts on these issues.

Written by Nancy Goodman and Anne Reynolds, with editorial assistance from Jim Gomes, Steve Bernow, and Rachel Cleetus.

This report is available online at:

www.environmentalleague.org and www.tellus.org.

Environmental League of Massachusetts

14 Beacon Street, Suite 714

Boston, MA 02108

(617) 742-2553

(617) 742-9656 (fax)

www.environmentalleague.org

Tellus Institute

11 Arlington Street

Boston, MA 02116

(617) 266-5400

(617) 266-8303 (fax)

www.tellus.org

August 2001

Table of Contents

Introduction	1
Sending Signals	5
Commonwealth Taxation 101	9
Environmental Tax Policy in Massachusetts	12
Examples of How ETS Could Work	
Using ETS Concepts to Manage Non-Sustainable Land Use	14
Pesticides, Fertilizers, and Sales Taxes: The Massachusetts Story	18
A Carbon Tax for Massachusetts: Issues and Possibilities	21
Taxing Toxic Substances/Promoting Pollution Prevention: ETS and Chemical Use.	25
Necessary Considerations	29
Conclusion	32
ETS Advocacy in Massachusetts:	
Environmental League of Massachusetts and the Tellus Institute	33
Endnotes	34

*I can't understand
why people are frightened of new ideas.
I'm frightened of the old ones.*

— John Cage

No one likes taxes. People don't like to pay them, they don't like to think about them, but they do like to complain about them. People feel unfairly burdened, they feel punished, they feel ripped off. They wonder where their taxes are really going, what benefits they are reaping from paying taxes; they worry about taxes going up.

However when it comes to discussing and debating tax policy, eyes glaze over, yawns are stifled and the easy answers win out. Tax cuts—good, tax increases—bad.

This primer describes an innovative approach to tax policy called Environmental Tax Shifting (ETS). The basic idea is that rather than raising revenues by taxing activities that we want to encourage or support like income or savings or labor, we would tax things we want to discourage like pollution or waste or sprawl. Of course, it's more complicated than that, but this primer aims to present some ideas about different ways we could raise the revenues needed in Massachusetts while at the same time protecting the environment and enhancing the economy. Such a “shift” could be designed to ensure that the overall level of taxation and revenues remains unchanged, only what gets taxed and at what rate would be altered.

It may sound too good to be true—but one thing is for certain, our current system of taxation isn't too good to be

true. It sends signals to businesses and consumers that seriously degrade our natural resources, harm public health and hurt our economy.

For instance, if it costs a lot to hire and keep a worker, in some measure because of payroll taxes, businesses will find ways not to hire—they'll automate their production or move somewhere where labor costs aren't as high. If it's cheaper to buy electricity generated by burning the most polluting type of fuel, it doesn't take a brain surgeon to know that's what utility companies and people will most likely choose.

ETS is now being discussed and promoted nationally and in more than a dozen states. Already, this approach has been implemented in several European countries and some Canadian provinces are exploring it as well. It is an approach that should be debated, tested, and used. Ultimately, it offers the promise of a tax system that supports rather than thwarts our economic and environmental goals.

For example, by imposing taxes on a product that are linked to the amount of pollution generated from manufacturing that

ETS is an approach to tax policy that would:

- provide incentives for better environmental performance and protection;
- continue to raise revenues at the same (or higher) levels as currently;
- reduce other taxes—on labor, income or investment, for example—that would in turn stimulate the economy; and
- ensure distributional equity and fairness.

Introduction

product, the government would send a price signal to producers and to purchasers. This approach would make polluting more costly and investing in alternative technologies, practices, and resources more attractive. The purpose of the tax is to prompt a change in behavior either by the producer or the consumer that would result in reduced emissions, better air and water quality, and enhanced public health. At the same time, it would help spur technological progress. Because the tax “shift” is achieved by a parallel reduction in some other tax, it also could stimulate beneficial economic activity.

A tax shift could span the economy as a whole—e.g., taxing an air pollutant emitted from many sources throughout the economy, while reducing a major tax such as payroll or income taxes. Or the shift could be concentrated within a sector or specific activity, so that the new tax and corresponding tax offset are applied to that activity alone (e.g., increasing the cost of driving while reducing transit fares).

One attractive approach to a tax shift is revenue neutrality—reductions in some tax rates exactly offsetting the new or increased taxes on pollution and other environmentally harmful activities. Another possible approach would be to target a portion of the revenue collected from environmental taxes for activities that support or amplify the price signal set by the new tax. For example, a tax on polluting sources—in energy use, agriculture, etc., might be coupled with technical outreach, education or even a subsidy for cleaner alternative technologies, practices and inputs. Or, taxes that raise the price of driving during congested times might be coupled with investment in improved access to alternatives modes of transit.

Some potential examples of ETS are:

- A “feebate” program that places a fee on purchases of less efficient and more highly polluting vehicles while offering a rebate for purchases of efficient and cleaner vehicles.
- A tax on the carbon content of energy, coupled with a decrease in some other broad based tax, e.g., the property tax rate.
- A tax on toxic chemicals with a portion of the revenue used to assist industries in adopting alternative materials practices.

The time has come to reform our tax system in ways that support our environmental and economic goals, while still generating the revenue necessary for Massachusetts government to provide essential services. In our work to protect natural resources and the health of our ecosystems, we need as broad an array of tools and policies as possible. While regulatory approaches have been and will continue to be effective, harnessing the tax system to promote environmental protection and discourage environmental degradation can be an extremely effective complementary policy strategy.

Sending Signals

ETS is essentially about using a powerful tool—taxes—to send new price signals, change behaviors and guide our producing and consuming activities so that we can bequeath a sustainable future to our children. When you think about it, sending price signals through taxes isn't an entirely new practice. Below is a list of items that currently are exempt from sales taxes in Massachusetts. At first glance, there may not seem to be much rhyme or reason in this group of items, but in fact these are all items or behaviors that we have deemed necessary or that we want to promote, and so the attempt has been made to make them less costly.

Examples of items currently exempted from Massachusetts sales tax:

- Food products for human consumption
- Articles of clothing
- Medicine, blood or blood plasma, artificial limbs, etc.
- Newspapers, books or magazines used for instructional purposes
- Coffins
- Materials used directly in agricultural production, commercial fishing, in an industrial plant, or in furnishing of power to an industrial plant
- Gun safety devices including trigger locks and gun safes
- Flag of the United States

Of course, sales tax exemption is only one way we send signals—there are also tax subsidies and other methods that encourage certain activities such as the federal income tax deduction for mortgage interest that encourages home ownership. And we send other signals, intentionally or not, by what

we do tax, e.g., employment (through the payroll tax), property ownership, and income.

Currently, there are many wrong or weak signals in Massachusetts' tax system that could be candidates for tax shifting. For example, pesticides and fertilizers are exempt from state sales taxes. These substances can pose serious health risks and significantly degrade water quality when they wash off into rivers and streams. The elimination of some highway tolls sends a signal to commuters to drive more (and alone) rather than to rideshare or use available mass transit options. The recently passed electric utility restructuring legislation has no incentives for customers to choose less polluting or renewable energy sources. Without such incentives, suppliers and customers will most likely choose the cheapest energy source, which could also be the most polluting, (e.g., coal). Tax shifting could address many of these concerns.

At the federal level, we are still heavily subsidizing industries that do harm to the environment. To be sure, almost all of us use the products these industries produce in one form or another. However, by continuing to give these industries a break and by not including in the price of these products the enormous environmental costs imposed by the extraction, refining, delivery and use of these products, we do ourselves a double disservice.

When we give large tax breaks to industry sectors whose products harm the environment and public health, there is little incentive for them to develop new and cleaner materials, practices, technologies, and products. Consider the following:

Sending Signals

- companies that mine fossil fuels and uranium benefit from a huge tax subsidy that allows them to deduct a certain percentage of their capital investments. The deduction is supposed to reflect the mine's diminishing value over time. However, the percentage these companies are able to deduct is predetermined and does not necessarily reflect the actual loss of value. In some cases, the tax deduction can exceed the original investment costs. This subsidy, called the percentage depletion allowance, is costing taxpayers \$3.6 billion.¹
- coal mining companies are able to treat income from royalties as capital gains. This allows the companies to pay tax on this income at a reduced tax rate rather than at the higher rate applied to ordinary income, resulting in \$380 million worth of subsidies.
- oil companies benefit from government-sponsored research and development programs; e.g., the Petroleum Research and Development Program costs taxpayers an estimated \$287.5 million.

Over the next five years, fossil and nuclear fuel companies will enjoy approximately *\$26 billion* in federal tax or spending subsidies.

Keep in mind that many of these subsidies were put in place decades ago, before we understood the serious threats we face due to air pollution and global climate change that are largely the result of burning fossil fuels. At the time, the U.S. understandably wanted to encourage the development of these energy sources. However, now we better understand some of the serious impacts from burning fossil fuels and cleaner alternatives are within reach. These subsidies remain in place, however, because these industries are powerful entities with strong

political connections and the capacity to make significant campaign contributions.

Imagine if renewable energy sources were subsidized at the same rate—there would likely be great gains in renewable energy technologies and marketability. Conversely, if the fossil and nuclear fuel subsidies were terminated, the price of these fuel sources would better reflect the real costs, thereby leveling the playing field for renewable sources that currently are somewhat more expensive.

If society truly wanted to hasten the arrival of renewables as a significant energy source, it would end the subsidies for fossil fuel industries, make extraction of fossil fuels more expensive, and create tax incentives to develop and use alternative energy. Using the \$26 billion over the next five years to discourage pollution and encourage sustainable energy would be a very exciting and beneficial way to practice ETS.

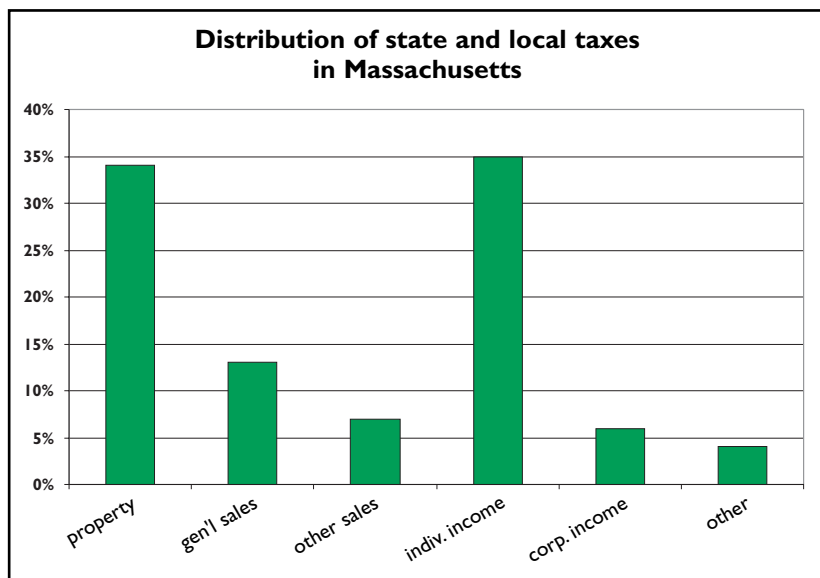
Commonwealth Taxation 101

The Massachusetts tax structure is the oldest in continuous existence in the nation², however, the state's tax code has evolved with the increasing demands and complexities of society, government, and business.

The state legislature has responsibility for changing the tax code to meet the changing needs of the Commonwealth.

In Massachusetts, the early post-colonial "general property tax" has evolved into an array of levies: the local property tax, the state income tax (1916), the sales (1967) and use taxes³; and the excise taxes (e.g., corporate, transfer of property, motor vehicle, gasoline (1928) and cigarettes (1945); and fees, etc.

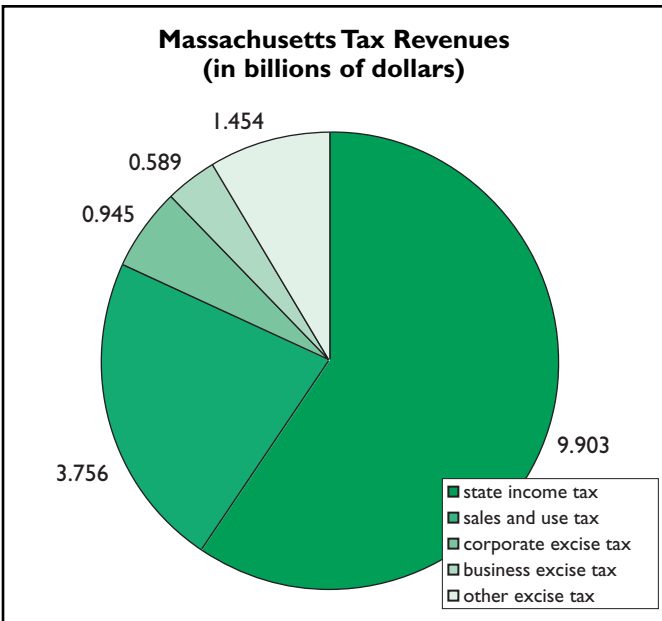
The proportion of revenue generated by each of these levies has varied considerably over the years⁴.



How does Massachusetts currently raise the funds it needs to support the wide array of programs and services that citizens have come to expect? The chart on the previous page breaks down our tax revenue by source⁵.

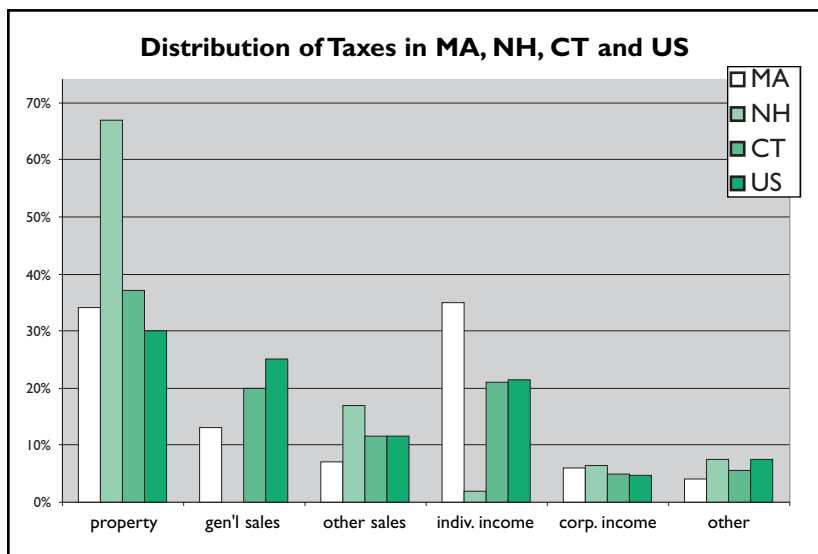
The story this chart tells is that the majority of state and local revenue in Massachusetts is raised through property taxes (locally collected) and individual income taxes, with income tax slightly edging out property tax as the number one revenue generator (this may change given the recent state income tax cut).

The Massachusetts Department of Revenue reports that in FY'01, it collected a total of \$16.646 billion in taxes broken down as shown on the pie chart below. In addition, municipalities collected \$7.5 billion in property taxes.



Commonwealth Taxation 101

What is perhaps as revealing is the story the chart below tells as it compares the sources of Massachusetts' revenue with how two other New England states and the country as a whole raise revenue.⁶ Note that the revenue raised from sales taxes in Massachusetts is about half the national average.



Not reflected in this chart, but worth noting, is that when adjusted for personal income, Massachusetts taxpayers are just in the middle in terms of the taxes they pay to the state. We rank 26th—paying no more and no less than the average U.S. citizen.⁷

The lesson to take from this chart is that there is no one “right” formula—different states use different formulas. Massachusetts can choose to change how it raises revenue. Specifically, we can choose to raise more of our revenue by taxing activities that are harmful to our environment.

Massachusetts Environmental Tax Policy

There are a number of places in the Massachusetts tax code where the idea of using taxes to influence behavior and improve the environment can be found, including⁸:

- an amortization program allowing a business deduction for costs incurred (between 1972 and 1980) for the installation or acquisition of equipment used to treat industrial waste (MGL ch. 63 sec. 38D).
- a property tax exemption for property that is certified to abate, prevent or eliminate industrial air pollution, and for property that reduces water pollution by treating wastes (MGL Ann. ch. 59 sec. 5 cl.44).
- a tax per ton of solid waste received by privately owned or operated resource recovery facilities or landfills, which is paid to the host municipality (MGL Ann. ch. 16 sec. 24A).
- unclaimed deposits from beverage containers to be used for recycling, composting and solid waste reduction projects (MGL Ann. ch. 94 sec. 321-325)
- a property tax scaled according to current use assessment of forest, farm, preservation, or recreational land (MGL ch. 61, 61a, 61b).
- a registration fee exemption for corporate van pool vehicles (MGL Ann. ch. 63 sec. 31F),
- an excise tax exemption for up to 30% of the cost of purchasing or leasing shuttle vans (MGL Ann. ch. 63 sec. 31E).
- a property tax exemption for qualifying solar and wind systems and accelerated depreciation for corporate income tax deductions for construction and installation of solar or wind climactic control or heating units (MGL Ann. ch. 63 sec. 38H).

Massachusetts Environmental Tax Policy

- a sales tax exemption for solar or wind powered heating or pumping systems (MGL Ann. ch. 64 H sec 2, 6(dd).
- an income tax credit available for purchase and installation of renewable energy source systems in principal residences (MGL Ann. ch. 62 sec 6(d).
- a franchise tax exemption for qualifying solar or wind energy equipment that may otherwise be included in determining a company's franchise tax liability (MGL Ann. Ch. 63 sec. 38H(f).
- an individual income tax deduction for income from the sale, lease or other transfer of US patents which are useful to energy conservation or to development of alternative energy systems (MGL Ann. ch. 62 sec. 2(a) 2(G).

We need to build on these first attempts and begin to find ways to incorporate the “shift” part of the equation as well.

Examples of How ETS Could Work: Land Use

The following section looks at a number of environmental issues and briefly details current impacts and ways ETS could be applied. We examine land use, pesticides and fertilizers, fossil fuels (carbon) and toxics.

Using ETS Concepts to Manage Non-sustainable Land Use

Land use in Massachusetts: The Problem

From 1950 to 1990, the population of Massachusetts increased by 28%, but the amount of land developed increased by 188%, a six-fold increase. While land use certainly is related to population, it is clear that we are developing in ways

Land Use Facts

- 16,000 acres of land is developed each year in Massachusetts.
- More than twice as much land has been developed since 1950 than was developed in the previous 300 years.
- Developed land throughout Massachusetts now has less than half the population density (4.97 persons/acre) than it had in 1950 (11.19 persons/acre).
- If recent development trends continue, roughly one-third of the state's land mass will be developed by 2010—four times as much land as was developed in 1950.

Source: **Mass. Audubon and Mass. Executive Office of Environmental Affairs**

that are consuming much more land than simple population growth would explain.

Some argue that the market is the sole or primary factor in changing patterns of land use and population concentrations. However, state and federal policies such as where we build our highways, how we finance new schools, and where we site our unwanted activities such as incinerators or sewage treatment plants, all play a significant role in

Examples of How ETS Could Work: Land Use

where citizens choose to live and work. In fact, the market responds to the trends created by government policies.

Decisions about how we use land and where we develop can impact the environment and our quality of life in a number of ways. Some of the problems related to unplanned growth and land use include:

Air pollution and traffic congestion—When communities develop in sprawling, low-density ways, it makes residents overly reliant on cars for all activities. This dependence on cars results in air pollution that plagues much of the state. Poor air quality has a disproportionate impact on the elderly, the young, and those with health problems such as asthma or immune deficiencies. In addition, many commuters waste hours sitting in traffic each day. In a recent nationwide survey, Boston ranked 5th in the time wasted category with the average person losing 66 hours a year.⁹

Inferior water quality—More than half of all Massachusetts rivers and streams don't meet state water quality standards. Much of this degraded water is the result of stormwater running over an increasing area of paved surfaces, often slick with oil and other contaminants, and into stormdrains that empty into our rivers, streams and coastal waters.

Loss of farmland and open space—Since 1960, Massachusetts has lost over 50% of its agricultural land. According to a recent report from the Massachusetts Audubon Society, we lose 44 acres of open space a day to some type of development.¹⁰

Inability to meet water supply demands—Some communities are facing water supply shortages as soon as the year 2007 while others are projected to experience shortages by 2012 or 2020. Not only is economic development in those regions

Examples of How ETS Could Work: Land Use

threatened by anticipated water shortages, but in some regions siphoning water from rivers for water supply is already seriously threatening aquatic species and lowering water quality as well.

Application of ETS principles to development and land use could:

- Provide further incentives to protect open space and farmland and reinvest in cities and urban areas;
- Encourage denser development and ensure that alternatives to sprawling, low-density development are available and affordable; and
- Help reduce dependence on the automobile.

Tax Policy Options for Promoting Smart Growth and Land Conservation

Community Preservation Act—A bill signed into law by Governor Cellucci in September 2000 enables communities to set up special funds that could be used for open space protection, affordable housing and historic preservation. The law allows communities to vote to raise their property taxes and those that opt to participate in the program will be eligible for matching state funds.

Pay to Pave—A strong correlation has been drawn between the percentage of a community's total acreage that is paved and water quality degradation.¹¹ While open space and wetlands can absorb rainwater, paved surfaces cannot. In an effort to encourage denser development surrounded by more open space or the use of new paving materials that allow water to be absorbed, certain tax policies, referred to as “pay to pave,” could be put into place. This approach acknowledges that there are costs associated with paving, not only in the form of

Examples of How ETS Could Work: Land Use

water pollution, but also in increased flooding that is costing government and citizens billions of dollars a year. This tax would reinforce other savings developers realize when they cluster development—savings from less extensive road systems and sewer and water connections. The tax would be a levy on newly-paved surfaces assessed on a per-square foot basis.

Land Value Taxation—Land value taxation is an approach in which the property tax—rather than being based both on the value of the land and the value of the buildings (and any improvements) on that land—is based primarily or exclusively on the value of the land. The idea is based on the economic philosophy of Henry George, a 19th century economist. George put forward the notion that the value of land is “created by the activities of many people in a community, not by any one person’s individual effort.”¹² Therefore, that value should be “shared” with the community since it is community “activity,” be it building of infrastructure or nearby amenities that confer value on the parcel. On the other hand, improvements on land and production from land do stem from individual efforts, not from general community activity and therefore should be exempt from taxes (since this is activity we want to encourage). George also suggested that imposing a tax on land and relieving taxes on improvements and production would prevent the dislocation in economic activity caused by land speculation.¹³

Because a land value tax would encourage building on land and improvements to land, it would have to be crafted and used carefully. In regions where we want to maintain open space, this tool would not be useful. However, such a tax could encourage improvements to run-down neighborhoods and more compact development in downtown areas. In

Examples of How ETS Could Work: Pesticides

Pennsylvania, this approach is being used in a number of cities including Pittsburgh and Harrisburg. The state allows cities to decrease their taxes on buildings and increase their taxes on land if they choose.¹⁴

Pesticides, Fertilizers and Sales Taxes: The Massachusetts Story

Why Pesticides?

U.S. agricultural pesticide use in 1996 was approximately 771 million pounds of active ingredient, or about twice the 1960s level.¹⁵ Close to 800,000 pounds of agricultural pesticides were used in Massachusetts alone between 1994-1998.¹⁶ Significant levels of pesticides are also used inside homes and buildings, and for non-agricultural uses, such as lawns and rights-of-way. Pesticide use is not only dangerous for pests—it is a threat to our health, our environment, our food safety, and the health of agricultural workers. According to the American Association of Poison Control Centers, 79,000 American children were involved in household pesticide poisonings in 1995. The EPA estimates 250-500 doctor diagnosed cases of pesticide poisonings for every 100,000 agricultural workers. Health effects other than poisonings—more chronic effects—are extremely difficult to recognize, diagnose, or track. Important environmental issues related to pesticide use include groundwater and water supply contamination, proper disposal of waste pesticides and containers, and effects on wildlife.

Massachusetts Pesticide Sales Tax Exemption

Massachusetts exempts sales of pesticides and fertilizers from the sales and use tax,¹⁷ as do 28 other U.S. states. This exemption is a tax expenditure, that is, a provision in the tax

Examples of How ETS Could Work: Pesticides

code that reduces the amount of tax revenues that may be collected. Tax expenditures, usually designed to encourage certain kinds of activities or to aid taxpayers in special circumstances, have a fiscal effect similar to a direct government expenditure.

The Massachusetts exemption of fertilizers, insecticides, and fungicides from sales tax results in an estimated \$1.1 million of lost revenue annually.

Application of environmental tax shifting (ETS) principles to pesticide and fertilizer use could:

- Provide an incentive to minimize pesticide and chemical fertilizer use, and
- Generate revenue to allow for tax relief in another area.

Pesticides: A Cautionary Tale

A recent Washington Post article entitled “A Cautionary Tale About Pesticides,” presents frightening new information about the serious health effects of pesticide exposure on children.

Researcher Elizabeth Guillette studied the Yaqui tribe in Mexico which had split philosophically over the use of modern versus more traditional farming methods. The philosophical split translated into a geographical split with one segment of the tribe pursuing agriculture in the valley (using pesticides) and the remainder of the tribe taking to the foothills. The results of Guillette’s studies of young children (ages 4-5) revealed stark differences between the two groups. The valley children lagged behind developmentally (e.g., poorer sense of balance), got sick six times more frequently than the children living in the foothills, had difficulty remembering and completing tasks, and exhibited more behavior problems. The mothers in the valley also had a higher incidence of miscarriage, stillbirths, and premature births. “The differences Guillette has found in the Yaqui children and in their mothers should be an alarm bell for the rest of us. It is part of a growing body of research linking ... pesticides to poor school performance and aggressive behavior.” Judy Mann, June 6, 2000, page C9

Examples of How ETS Could Work: Pesticides

Tax Policy Incentives for Reducing Use of Pesticides

Repealing the sales tax exemption for pesticides and fertilizers is one important step Massachusetts could take towards encouraging less use of chemicals in homes, schools, on lawns, and for food production. There are fifteen states that do not exempt pesticides and fertilizers from sales tax, and three states that exempt fertilizers but not pesticides.

Options for modifying Massachusetts tax policy relating to pesticides

- Cancel exemption—apply 5% sales tax to pesticides and fertilizers in Massachusetts;
- Apply 5% sales tax to pesticides, but maintain exemption for fertilizers;
- Apply special excise on sale of pesticides classified as “restricted use” as they are determined to be the most hazardous by the MA Pesticide Bureau; or
- Apply sales tax to all pesticides and fertilizers that are not used for food-production.

Revenues and Tax Shifting

In Massachusetts, repeal of this exemption would result in an estimated \$1.1 million in revenue that could be earmarked for field research and education on sustainable agriculture, promotion of less toxic alternatives for pest control, protection of groundwater from agricultural chemical contamination, collection programs for waste pesticides and empty pesticide containers, or efforts to prevent poisonings from common household pesticide products.

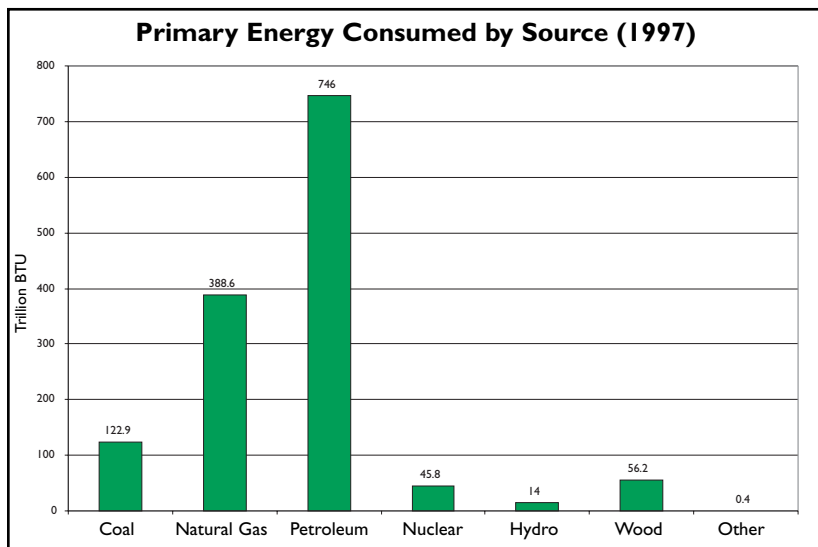
Examples of How ETS Could Work: Energy

This new revenue stream also could be used to provide tax relief to taxpayers, possibly being targeted to the sub-set of taxpayers subject to the new tax burden. For example, the revenue could be used to benefit farmers whose practices protect the environment. Options for tax relief include property tax relief for farmers or estate tax relief to support maintaining farmland in the next generation.

A Carbon Tax for Massachusetts: Issues and Possibilities

Why a Tax on Energy?

Energy generated from fossil fuels (coal, oil, natural gas) is associated with several environmental ills—air pollution from fuel combustion, ecosystem damage from mining, refining, and transporting fossil fuels, and the potential catastrophic consequences of global climate change from carbon dioxide (CO₂) emissions.



Examples of How ETS Could Work: Energy

Massachusetts ranks 22nd in energy consumption nationally. The vast majority of our electricity is generated from fossil fuels, with petroleum as the most consumed energy source as it is the primary component of gasoline¹⁸.

While energy use is essential to our current way of life, there is great potential to reduce the energy intensity of our economic activities and lifestyles, to increase efficiency, and to develop more benign energy sources. Potential energy savings and cleaner energy sources are becoming available with technological advances.

There are several reasons why a tax on carbon is a sensible approach to taxing energy use. Carbon taxes on fossil fuels are a reasonable proxy for other energy-related air pollutants. Coal, for example, would be most affected by a carbon tax, relative to other fuels. Not only does it contain the highest amount of carbon per unit of energy, but it is also the “dirtiest” fossil fuel, giving rise to particulates, toxic heavy metals, nitrogen oxides (NO_x), and sulfur dioxide (SO₂) emissions. Furthermore, because it is the cheapest of the fossil fuels per unit of energy, it would experience the highest relative price increase from a carbon tax.

The goals of a tax on carbon are to:

- Encourage a reduction in energy use and resulting carbon and pollution emissions;
- Encourage use of fuels that are less carbon intensive and less polluting; and
- Generate revenue to allow for a corresponding cut in taxes on beneficial activities.

Examples of How ETS Could Work: Energy

The Size of a Carbon Tax

A carbon tax should be sizable enough to be felt by energy users and affect their consumption, fuel choice, and technology decisions. At the same time, it should not impose an undue burden on the average household and business. Energy expenditures are less than 5% of most household budgets, and even of most business budgets, so even if the cost is increased by 10%, that translates into only a ½% increase in a total household or business budget. A tax level of \$10 per ton of CO₂ generated would fall within this range.

As shown below¹⁹ (chart on left), a per ton tax levied on CO₂ generation would affect various fuels²⁰ based on their carbon intensity. These tax rates for common fuels would translate into an annual tax burden of \$188 on the average household, as shown below (chart on right). Recall, however, that under an Environmental Tax Shift (ETS) approach, this tax burden would be offset by tax relief in other areas.

Tax Rates for Common Fuels at \$10/ton of CO ₂		Impact on Average Annual Household Energy Bill at \$10/ton of CO ₂	
Gasoline (cents per gallon)	9.7	Residential Energy	\$99
Electricity (cents per kWh)	0.41	Gasoline	<u>\$89</u>
Natural Gas (cents per therm)	6.1	Total Energy Bill	\$188
Fuel Oil (cents per gallon)	11.1		
Coal (\$/ton)	\$25.53		
Residual Oil (\$/barrel)	\$5.41		

Possible candidates for tax relief would include:

- Drivers of energy efficient vehicles;
- Home owners or renters who install energy saving heating systems or other “green” devices; or
- Businesses that subsidize their employees’ mass transit fares.

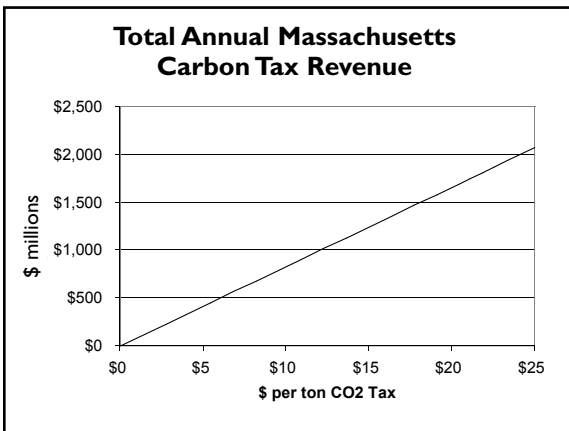
Examples of How ETS Could Work: Energy

The chart below illustrates the percentage increases in fuel prices resulting from a tax of \$10/ton of CO₂²¹.

Percentage Increase in Fuel Prices Due to Hypothetical Carbon Tax of \$10/ton CO ₂				
Fuel	Units	Price/Unit	Tax/Unit	Increase
Electricity	KWh	\$0.10	\$0.00	4%
Gasoline	Gallon	\$1.33	\$0.10	7%
Natural Gas	Therm	\$0.71	\$0.06	9%
Fuel Oil	Gallon	\$1.04	\$0.11	11%
Residual Oil	Barrel	\$16.85	\$5.41	32%
Coal	Ton	\$42.86	\$25.53	60%

Revenues from a Carbon Tax in Massachusetts

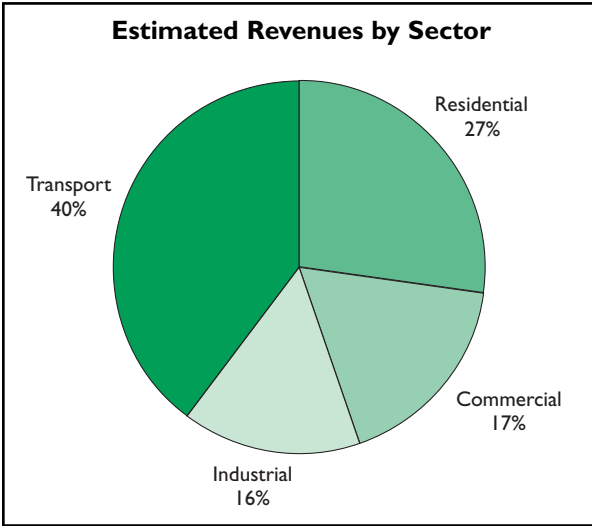
The table below illustrates the potential annual carbon tax revenue in Massachusetts at various tax levels. A tax of \$10/ton of CO₂ corresponds to a tax of \$36.67 per ton of carbon combusted. Application of a carbon tax at this level in Massachusetts would result in a total estimated annual revenue of \$828.7 million. For purposes of comparison, total tax revenue in Massachusetts was \$24.1 billion in FY'01.



A portion of the revenues generated from a carbon tax could be used to promote energy efficiency and renewable energy or for mass transit infrastructure.

Examples of How ETS Could Work: Energy

Carbon tax revenue would be generated from various energy use sectors. The graph below illustrates each sector's share of total estimated revenues, based on the hypothetical tax level of \$10/ton and current energy uses in Massachusetts in each sector:



Taxing Toxic Substances/Promoting Pollution Prevention: ETS and Chemical Use

Another option for the ETS approach in Massachusetts would be a new tax on toxic chemicals. Such a tax could both generate substantial revenues and discourage excessive use of dangerous substances.

The Existing Massachusetts TURA Program

Approximately 1.3 billion pounds of toxic chemicals are used by large industry in Massachusetts every year, more than the combined weight of every person in the commonwealth. Many of these chemicals are associated with a wide range of ills, including cancer, neurological disorders, birth defects, infertility and reproductive problems.

In 1989, the Massachusetts legislature unanimously enacted the Toxics Use Reduction Act (TURA). TURA was a first-in-the-nation attempt to achieve pollution prevention by means of (1) mandatory annual reporting of companies' chemical use; (2) biannual planning by companies of ways to reduce their use of toxics; and (3) annual fees paid by companies based on the number of chemicals they use in large quantities (over 10,000 pounds per year per chemical) and how many workers they employ.

TURA has achieved some success in reducing the use of toxic chemicals in Massachusetts: a core group of companies that have reported under the statute since 1990 showed a 33% decrease in their use of toxics for the years 1990 to 1998²².

However, it is unlikely that the TURA fees have been much

Examples of How ETS Could Work: Toxics

of an incentive to bring about these reductions, since the fees are based on the number of chemicals a firm uses in large quantity, not on the total weight of chemicals used. A company that uses 10,000 pounds of a TURA-listed chemical in a given year will pay the same TURA fee for that use as a firm of similar size that uses 50,000 or 500,000 pounds of that same chemical. Once a firm reaches the 10,000 pound use threshold for a particular chemical, no increment in the use of that chemical will have any effect on the fee the firm pays. Also, the per-chemical fees are modest enough (\$300 per chemical) that they likely do not have much influence on companies' chemical use even near the 10,000 pound threshold.²³

Furthermore, the current TURA fees do not generate significant revenues for the state. The TURA statute limits the total TURA fee collections to between \$4 and \$5.5 million per year,²⁴ all of which is to be used to cover the expenses of the Toxics Use Reduction Program.

An ETS Approach to Taxing Toxics

Massachusetts could further reduce the use of toxics and raise more revenue by instituting a new tax on toxic chemicals. Such a tax could either be levied on one or more of the following: (1) manufacturers of products with toxic content, (2) industrial users of products containing toxics, or (3) consumer products with toxic content.

A toxics tax could also be levied either on all chemicals currently listed under TURA (approximately 1,420 substances) or only on certain classes of toxics (e.g., carcinogens, especially dangerous chemicals). The amount of revenue raised by such a tax would depend, of course, on how broadly the tax was charged and the rate of taxation.

Examples of How ETS Could Work: Toxics

To take a simple example, a 10¢ per pound tax charged to industrial users and manufacturers of all TURA-listed chemicals would have raised \$138 million for the year 1998. Or, in that same year, a 25¢ per pound tax on those TURA chemicals that are classified as the top 10 carcinogens by the U.S. Occupational Safety and Health Administration (OSHA)²⁵ would have yielded \$96 million.

If a new toxics tax were to raise approximately \$138 million per year, that money could allow the lowering of the corporate income tax (which raised close to \$1 billion in FY'01, at the rate of 9.5%).

Alternatively, new revenues from a toxics tax might be applied to any one of a number of appropriate uses. For example, such revenues could fund a new program of collecting and safely disposing of household hazardous wastes. Other uses might include funding research under the auspices of the Department of Public Health on the health effects of toxic chemicals. These revenues might also fund a public education campaign on non-toxic alternatives to products containing toxics such as cleaning supplies, paints and paint thinners, insecticides, drain cleaners, etc.

Options for new revenue use:

- ◆ Lower corporate income tax
- ◆ Programs to collect and dispose of household hazardous waste
- ◆ Research on health effects of toxic chemicals
- ◆ Public education campaigns on non-toxic alternatives to commonly used household products.

Necessary Considerations

Using the tax system to send signals and change behavior raises many legitimate, but not insurmountable, questions. In thinking about new ways to better protect the environment, we need to carefully weigh the pros and cons of an ETS approach against more traditional methods such as regulatory programs.

Issues that need to be considered include:

Adequacy of the income stream—If revenues are raised from taxing an activity that we wish to discourage with this price signal, success could mean that there will be a decrease in the activity and thus a corresponding decrease in the revenue stream. What needs to be determined is how and to what degree the revenue stream would be affected, absent some adjustment. One remedy would be to raise the rate periodically, or according to a formula tied to the level of the underlying activity, to ensure a stable revenue stream. Often, the main impact of a tax is to reduce the “rate of growth,” so the revenue stream may not decrease, but may not grow as quickly as it otherwise would.

Availability of alternatives—Certainly some activities or products are so harmful that they should be heavily regulated or banned altogether—such as the use of DDT or lead paint. However, there are many activities and products that should be discouraged or phased out in an orderly way and replaced with more benign products. The question then is do any adequate alternatives exist, and, if so, are their costs within reach and competitive with the tax in place? Also, will the consumer recognize and value these environmental benefits and have sufficient information and confidence to make a shift to the new product or practice? For instance, if we want to discourage single occupant vehicle trips, are mass transit options

Necessary Considerations

readily available? If we want to encourage less use of pesticides, the public will need to learn about less toxic alternatives that work.

Equity—Generally speaking, flat taxes tend to hurt poorer people. However, a carefully designed tax shift need not be regressive; there are ways to address the regressivity of a tax through exemptions, caps, refunds, and other techniques. For example, if there were to be a tax on carbon use that would result in higher electric bills, a threshold could be established (e.g., average electric use per individual), at or below which there would be no price increase, i.e., the tax would be applied only to “above threshold” use.

Getting the tax right—It is difficult to know how high a tax needs to be to actually affect behavior. Would adding \$500 to the price of a less fuel efficient car and offering a \$500 rebate on a more fuel efficient car affect purchasing decisions? What about \$1,000? Finding the right amount to influence behavior is difficult and the level of the tax necessary to change buying patterns or manufacturing processes may be so high as to be politically unfeasible. It may often be necessary to conduct research, testing and pilot programs to help determine the “right” amount that would lead to the desired change.

Unintended consequences—Clearly some sectors of the economy are more polluting than others and these sectors could be disproportionately affected by an environmental tax, e.g., a tax on mercury emissions. The intent of an environmental tax is not to put businesses out of business. The intent is to encourage changes in behavior or processes, jumpstart technological innovations and balance the playing field for emerging cleaner technologies. If the new tax is accompanied by a tax decrease,

Necessary Considerations

e.g., a decrease in the property tax or state tax credits for federal payroll taxes, that would help lighten the burden. Taxes could be phased in over time so that the transition will be gradual instead of sudden and allow businesses to incorporate the shift into their business plans. For any workers who might be affected, transitional assistance and retraining can be offered. In every century we see the decline of certain industries and the rise of others. These transitions are difficult but they are necessary, not only to keep our economy vibrant, but to protect our health and our natural resources.

*The best way to
have a good idea is
to have lots of ideas.*

—Linus Pauling

With all the progress we have made on the environmental front over the past few decades, we continue to suffer from the impacts of human activity—in Massachusetts, in our country, on our planet. Polluted waters, disappearing landscapes and species, climate change, degraded air quality, and all the attendant impacts on our health and quality of life, still plague us.

How can we change behavior? How can we encourage and support innovation that will help address environmental problems? How can we raise revenues to address environmental challenges without additionally burdening taxpayers? We can educate, we can legislate, we can offer incentives and disincentives. Or, we can do nothing and wait for a crisis to prompt action some time in the future.

Environmental Tax Shifting is one idea. It combines two approaches—a legislative and a market approach. It acknowledges that both public policy and the market (i.e., prices) can impact behavior—both at an individual and industry level. It just may be the good idea we are seeking.

ETS Advocacy in Massachusetts

The Environmental League of Massachusetts

Founded in 1898, the Environmental League of Massachusetts (ELM) is an independent nonpartisan organization that works to protect the air, land and water of the Commonwealth. ELM voices citizens' concerns, advocates for strong, responsible environmental laws and policies, ensures that the laws are implemented and enforced, and educates the public about these issues.

ELM also coordinates the Massachusetts Environmental Collaborative. The Collaborative consists of more than 50 environmental organizations from across the state, including land trusts, coastal protection groups, environmental justice organizations, and watershed associations. Its purpose is to improve the collective research, advocacy, and communications capabilities of the state's environmental non-profits. After three years, the Collaborative has been successful in advancing several items on the state's agenda: brownfields reform, community preservation, pesticide use reduction, beach water testing, and increases in the environmental budget.

Tellus Institute

Tellus Institute has been at the forefront of environmental resource policy work since 1976, identifying, analyzing and promoting innovative ways of improving local, regional and global environmental conditions for current and future generations. This work has included a variety of pricing, market and market-based approaches as complements to regulatory and other approaches. Tellus' work in the areas of land use management, pollution prevention, solid waste analysis, and toxics use reduction provides a strong foundation to assess new policy tools in a variety of environmental issue areas.

- 1.** Information on federal subsidies is from "Paying for Pollution," March 2000, published by Friends of the Earth, Taxpayers for Common Sense and U.S. Public Interest Research Group Education Fund. Dollar figures refer to the cost of the project over its lifetime or, if those figures were not available, the estimated cost to taxpayers over five years.
- 2.** Cobb, Charles K. Tax Law in Massachusetts 1629-2000 from www.masstaxlaw.com.
- 3.** Tangible personal property brought into Massachusetts for use in the state is subject to a use tax at the same rate as the sales tax.
- 4.** Cobb, Charles K. Tax Law in Massachusetts 1629-2000 from www.masstaxlaw.com.
- 5.** From Janet E. Milne, Director, Environmental Tax Policy Institute, Vermont Law School.
- 6.** Ibid.
- 7.** Massachusetts Taxpayers Foundation, Interstate Tax Comparisons: Where Does Massachusetts Stand, October 1997 (figures used in this report are from 1994).
- 8.** Milne, Janet E. Environmental Taxes in New England: An Inventory of Environmental Tax and Fee Mechanisms Enacted by the New England States and New York. Vermont Law School: 1996.
- 9.** Texas Transportation Institute, 1997 Urban Mobility Study at <http://mobility.tamu.edu>.
- 10.** Massachusetts Audubon Society, Losing Ground, May 1999.
- 11.** Tom Schueler, The Importance of Imperviousness, Fall 1994, Center for Watershed Protection at www.cwp.org.
- 12.** Nathaniel Lichfield and Owen Connellan, "Land Value Taxation in Britain for the Benefit of the Community: History, Achievement and Prospects," Lincoln Institute of Land Policy, 1997.
- 13.** Ibid.
- 14.** From "Tax Reform that Agrees with Vermont," Friends of the Earth, Vermont Businesses for Social Responsibility, Vermont Natural Resources Council, Vermont Public Interest Research Group, March 1999.
- 15.** Friends of the Earth. Fair Agricultural Chemical Taxes: Tax Reform for Sustainable Agriculture. p. 12.
- 16.** Most recent figures available from The National Center for Food and Agricultural Policy website at www.ncfap.org.

Endnotes

- 17.** M.G.L. c. 64H § 6(p) exempts several types of agricultural products and supplies, including "3) sales of fertilizer; including ground limestone, hydrated lime, insecticides, fungicides, seed inoculants, seed disinfectants and plant hormones, as well as other substances commonly regarded in the same category and for the same use".
 - 18.** State Energy Data Report, 1997, U.S. Energy Information Administration.
 - 19.** All tax and revenue estimations are based on the Energy Information Administration State Energy Data Report 1996 for Massachusetts/ New England and were calculated using the Center for Global Change State Carbon Tax Model, 1996.
 - 20.** Residual oil is a heavy distillate used by industries and utilities.
 - 21.** Prices shown are from State Energy Price and Expenditure Report 1997, U.S. Energy Information Administration.
 - 22.** From "1998 Toxics Use Reduction Release", Massachusetts Department of Environmental Protection.
 - 23.** M.G.L. c211, sec.19 (c).
 - 24.** M.G.L. c211, sec. 19 (d).
 - 25.** See www.turi.org/turadata.
 - 26.** Legislation passed by the voters in November 2000 reduces the state income tax rate to 5% over three years; this tax cut will result in an estimated loss of revenue for the state of \$1.2 billion.
-

Center for Economic Justice

www.progress.org/banneker/shift.html

Center for a Sustainable Economy

www.sustainableeconomy.org

Citizens for Tax Justice

www.ctj.org

Environmental Taxation Worldwide

www.greentaxes.org

Friends of the Earth

www.foe.org

Minnesotans for an Energy Efficient Economy

www.ME3.org

Redefining Progress

www.rprogress.org

Sky Trust

www.skytrust.cfed.org

Environmental Tax Shifting in Massachusetts

It's not too much of a stretch to say that Massachusetts gets most of its money by taxing the American Dream. The lion's share of the state's tax dollars come from earning a living, owning a home, and buying goods and services. Instead of raising so much revenue by taxing things that people like and society wants to encourage, why not tax things people don't like and that society should be discouraging? Tax the American Nightmare of pollution, global warming and waste!



Can our tax system help us protect the environment and maintain a strong economy?

Are we sending the wrong signals, degrading our environment and weakening the economy through what we choose to tax or not to tax? How could “shifting” from taxing “goods” to taxing “bads” set us on a different course?

This booklet, “Environmental Tax Shifting in Massachusetts: Taxes that Work for Our Environment and the Economy,” explores this idea and gives examples of ways we could use tax policy to achieve our shared environmental and economic goals.

