TAX POLICY FOR RECYCLING AND WATER QUALITY: An Analysis of Programs From Other States

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Executive Summary

A. Purpose of Study

This paper analyzes and evaluates the use of environmental tax policy across the country in two categories: recycling and water quality. The intention is to provide background information on environmental tax programs that can be used as a guide for the design and implementation of environmental tax programs in Washington State. With information from programs in other states, legislators and agencies can learn from both the positive and negative elements of programs tested elsewhere.

B. Summary of Findings

- Most states in the country have tax subsidies for recycling and/or pollution control investments.
  - — Income tax credits are the most common tax incentive provided for recycling. (Many of the features of income tax credits can be adapted for use with Washington State's B&O tax system.)
  - — Property tax exemptions, and sales and use tax exemptions are the most common tax incentives provided for water pollution control.
- Programs targeted to meet specific environmental needs of states were found to be very successful in promoting recycling and water quality goals.
- Almost no states follow the "polluter pays" principle in their efforts to control water pollution. Taxes and fees tend to be only large enough to cover administrative costs of educational and cleanup programs. An incentive to change polluting behavior is more likely to come from the educational programs funded by the tax than from the tax itself.
- Programs that are most successful in meeting their goals contain these elements: customer orientation and interagency cooperation, marketing efforts, and technical assistance.
  - — The administrative costs of both recycling and pollution tax incentive programs are generally very low.
  - — Environmental tax incentive programs that are administered jointly by environmental agencies and revenue departments tend to be more successful in meeting goals and less frustrating administratively for the agencies involved.

Table of Contents

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I. INTRODUCTION

A. Purpose of Study

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1. Focus on needs of Washington State

A growing body of literature advocates the use of market-based environmental incentives as a supplement to "command and control" regulation. Because a significant number of states are using environmental tax programs, this information on tax policy can provide background for policies on the future of Washington's environmental quality. The specific relationship of each of the categories to Washington State is discussed in this section.

a. Recycling

The primary focus in the area of recycling will be on **tax incentives**. Washington has very well developed litter cleanup and recycling plans, among the best in the nation. Washington is also extremely fortunate to have the Clean Washington Center, which is dedicated to and has been very successful in creating markets for recycled materials. The Clean Washington Center has also published a detailed analysis on the economics of recycling (Clean Washington Center, 1993), which covers economic issues beyond the scope of this study. In other states, a variety of recycling equipment and recycling facility tax programs have been implemented to stimulate the market for recycled materials. Tax incentives to promote recycling, as found by this study, appear to work best in conjunction with other non-tax incentive programs, such as the technological assistance provided by the Clean Washington Center.

The Environmental News Network recently reported that the demand is high for most recyclables and that prices have risen markedly for used paper, aluminum cans, cardboard, and plastic (Environmental News Network, 1995). Creating market incentives through the tax system can further encourage an increase in recycling activities. According to a 1989 study by the Alaska State Legislative Research Agency, the market for recycling often needs stimulation using a variety of governmental techniques *including tax incentives*.

b. Water quality

Water is a valuable resource in this state, and one in which the legislature has been particularly interested. A recent Louis Harris poll on environmental quality in the Northwest found that the most important environmental issue to the people surveyed is water pollution. Also, the majority of respondents believed that the government (particularly state and local) should be doing more to protect the environment (Louis Harris and Associates, 1995).

This study includes research on two areas of water quality tax programs:

- *Tax subsidies for pollution control:* Across the country, tax incentives are the most common form of environmental tax policy in use for pollution control equipment and facility investments. These programs include special deductions and credits for income taxes, as well as exemptions for sales and use taxes and property taxes.
- *Taxes and fees (charges):* Water quality taxes and fees are the other focus in this section of the report. Specifically, the report covers taxes and fees used to control nonpoint sources of water pollution. Nonpoint pollution is one of the targeted areas in a report of the Puget Sound Finance Committee (1989) on the funding of water quality improvements in Puget Sound, further indicating that the problems from this form of pollution need attention.

B. Justification for the use of tax policy to promote environmental goals

The use of environmental tax policy is gaining support in the theoretical literature as one of the market-based tools for promoting environmental goals (see Cropper and Oates, 1992, and Stavins, 1991). Studies on the use of environmental tax policy have been performed on an international scale. The Organisation for Economic Co-operation and Development (OECD) published case studies of The Netherlands, Sweden and the United States (Oosterhuis and Lohman, 1994; Bohm, 1994; Oates, 1994). However, the U.S. portion of this study did not include an extensive analysis of tax programs at the state level. Oates (1994) calls for "a comprehensive and systematic collection of information on state and local environmental taxes and fees" because of the growing interest in the topic (p. 121).

Most of the theoretical discussion has focused on **pollution taxes** (user charges) as opposed to **tax subsidies**. This emphasis can be traced to economic theory on externalities.[1] Environmental damage, such as water pollution, is considered a negative externality which causes market failure when the marginal social cost of such damage is not factored into the cost of a production operation causing pollution (Stiglitz, 1988). Without a specific price attached to environmentally damaging activities, there is no assignment of responsibility. Consequently the polluter continues to produce at a level which assumes that the externality does not exist. A tax can assign responsibility to the polluter, and thus correct for the market imbalance. As a consequence the polluter factors the cost of pollution into business decisions.

The OECD advocates taxation on environmentally damaging activities consistent with the "polluter-pays principle" (OECD, 1993). Their study focuses on several of the design issues and economic implications of taxes on polluting activities.

The GAO also supports the use of environmental taxes as a less costly alternative, or supplement, to "command-and-control" regulation. They specifically recommend the use of taxes to limit

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[1] The term "externalities" is defined by Musgrave and Musgrave (1984) as "situations where consumption benefits cannot be limited and charged to a particular consumer or where economic activity results in social costs which need not be paid for by the producer or the consumer who causes them" (p. 48).

nonpoint sources of water pollution (e.g., pesticide use and urban run-off that come from a variety of sources), that are not adequately addressed by traditional government intervention (GAO/RCED-93-13, 1993). Evidence from several European countries support the premises of the GAO. Austria imposed a tax on pesticides and fertilizers which resulted in a 30 percent decline in their use even though this tax was not specifically designed to affect behavior (GAO/RCED-93-13, 1993). Also in Europe, in an effort to control water pollution, the Netherlands levies a tax on discharges of oxygen consuming substances and heavy metals. More water treatment facilities and higher quality waste water have resulted over the 20 years of the tax's existence (Oosterhuis, et.al., 1994).

Tax subsidies have not been as widely supported in the environmental economics literature. Jenkins and Lamech (1994) state that a subsidy is equivalent to a tax in achieving optimal pollution levels. Yet they go on to recommend against the use of subsidies because, compared to other market-based incentives, these tax incentives are less economically efficient, inhibiting innovation solutions and encouraging the creation of more polluting activities than would otherwise have been created. Neither does the OECD's 1993 report support the use of tax incentives because of its incompatibility with the international acceptance of the polluter-pays principle.

The review of environmental tax policy across the U.S. has clearly indicated that subsidies dominate in practice at the state level. This research has thus provided an interesting opportunity to discover some of the differences between theory and practice in the area of environmental tax policy. In the U.S., "carrots" are apparently believed to work better than "sticks" when it comes to designing and implementing environmental policy. Perhaps the element not captured in the theoretical economic analysis of tax subsidies is that government agencies administering these tax subsidies often practice a customer-focused approach to the task. Agency personnel can choose their level of customer-focus by using a combination of marketing, technical assistance, and communication skills in an effort to meet the goals of the legislation.

C. Research Methodology

1. Sources of information

Most of the information on the states' tax laws came from three sources:

- Commerce Clearing House Online Tax Service.
- State Tax Notes, a weekly publication of Tax Analysts, Arlington, Virginia.
- Phone interviews with key personnel in agencies in various states.

2. Analysis & evaluation

Each state's laws were analyzed for design information. Selected states were chosen for phone interviews based on interesting aspects of their laws that warranted further investigation. The state law analyses and phone interviews were intended to address the following questions:

- What are the specific design features of each law?
- What are the revenues and costs of each program?
- How is the program administered?
- Has the law created the desired effects?
- How has industry/business responded?
- What kinds of design changes would make the law more effective?

Effectiveness in meeting environmental goals through tax policy is extremely difficult to measure. This is often due to the existence of other environmental programs that are working simultaneously on environmental issues. In fact, many states do not attempt to track data that would indicate a cause and effect relationship between tax incentives and pollution levels, and those that do track data usually gather information (such as number of applications approved) that only serves as *indicators of success*. Tax programs may also be considered successful by government agencies if they meet other intended goals, such as minimizing competitive disadvantages with other states that offer tax incentives.

The various indicators of a successful program gathered during the interview process include: business response to the tax program; ability to attract new business to the state and maintain or increase employment levels; high compliance with related non-tax regulations (e.g., for pollution control); ease of administration; low cost of administration; and, level of agency support for the program. Agencies often have a general sense of success in meeting environmental goals through their direct involvement with the program. These *indicators of success* are referred to throughout this report when the term *success* is used.

A number of states did track information on various indicators of success. Specific information from certain states is contained in the case studies (Appendices A and B). The body of the report also summarizes information gathered on success.

3. Limitations

- Tax subsidies on pollution control investments generally cover air and water (and occasionally land and/or noise) pollution. While it is often difficult to distinguish between each of these types of pollution, our focus for Washington is on water pollution control.
- Recycling and pollution control provisions for hazardous waste were not included in this study unless they were part of an overall provision that included general recycling and/or water pollution control.
- The taxation of oil and gas or other petroleum products was not included in this study.
- State law that allows income tax deductions and amortization provisions are generally not discussed since these tax benefits are not compatible with the Business and Occupational (B&O) tax system in Washington.
- Taxes and fees charged for environmental programs were excluded where there was no direct link between the taxed activity and the environmental effects, (e.g., the tax on cigarettes and tobacco which funds water quality programs in Washington).
- While they are often fairly well defined, tax incentives dealing with recycling, water quality, and non-point sources of pollution are at times not easily pinpointed in state tax codes, due to the use of alternative wordings for key words. Additional and extensive online searches were made for alternative names for the topics under investigation. It is possible, however, that some provisions were not located, and are therefore not included in this report.

D. Environmental tax policy in Washington State

1. Types of tax programs

a. Previous environmental tax policy

i.) Sales & use tax exemption for pollution control equipment (RCW 82.34):

Washington law provided for an exemption from sales and use tax for the acquisition of pollution control facilities. To get this exemption, taxpayers had to apply for a certificate prior to December 1, 1981.

ii.) B&O tax credit for pollution control devices (RCW 82.34):

In the place of the sales and use tax exemption, Washington taxpayers were allowed to apply for a business and occupational tax credit of 2 percent of the cost of the facility per year. The maximum credit was 50 percent (over a total period of 25 years) of the tax liability. Filing for certification of pollution control facilities also had to be done before December 1, 1981. Results of an interview with a state agency appear below in subsection 2.

iii.) B&O tax exemption for treatment or processing of effluent water (RCW 82.12):

From the period July 28, 1991 to December 31, 1993, Washington allowed a B&O tax exemption for the treatment or purchase of effluent water that was purchased for commercial use directly from sewage treatment facilities operated by local municipalities or quasi-municipal corporations in Washington. (Use tax also did not apply to such facilities).

b. Current environmental tax policy

i.) Recent legislation (HB 1119):

During the 1995 session, the Washington legislature passed HB 1119, a manufacturing exemption designed to alleviate any competitive disadvantage with other states that have sales and use tax exemption. This provision includes pollution control facilities.

ii.) Model Toxics Control Act (RCW 82.21):

Voters in Washington approved the Model Toxics Control Act on November 8, 1988. A tax of 0.007 percent on the wholesale value of hazardous substances is levied for “the privilege of possession.” The moneys are deposited in the toxics control account.

iii.) Litter tax (RCW 82.19):

Manufacturers, wholesalers, and retailers are levied an annual litter tax on specified products equal to the value of such products multiplied by 15/1000 of 1 percent.

2. Additional information on the B&O tax credit for pollution control

An analysis and evaluation of the B&O tax credit for pollution control was done so comparison with other programs across the country would be possible. The information is presented in this section to provide a more complete picture of Washington State's environmental tax policy.

The Department of Revenue is currently administering this program. While the certification process for the B&O tax credit program ended in 1981, the twenty-five year coverage of this 2 percent per year credit means that the latest companies to receive certification are still getting the credit, and will for another 10 years. The initial intent of the law was to give industry some relief from the costs of regulatory compliance with pollution control.

Lost revenues to the state: Over the last ten years (1985-94), the average annual amount of revenues lost from this credit was $10,444,000. As the time period for the credit expires over the next 10 years, this dollar amount will decline.

Administration: The administrative process in the Department of Revenue is manual. Each piece of equipment required separate certification (rather than one overall certification for each applicant), and thus was quite cumbersome. Approximately 150 certifications are still active. The most active time administratively occurs from March to August each year involving approximately 1/3 of one individual's time per year. The cost of administration is small. The Department of Ecology's role in the certification process ended in 1981. Therefore, information on success in reducing pollution would be difficult to find. However, as mentioned above the intent of the law was to provide relief to businesses, which it did do, as indicated by the lost revenues to the state.

II. RECYCLING

A. Types of Tax Programs in Use

Across the country, the following types of tax subsidies are in use:

- Income tax credits
- Sales/use tax exemption
- Property tax exemption
- Deduction for income tax purposes

Income tax credits[2] are the most common type of tax benefit available for recycling equipment and recycling facilities. Sales and use tax exemptions and property tax exemptions are also available in a variety of states. Tax credits and exemptions are compatible with the tax system in Washington. Since Washington does not have a traditional income tax system, at first glance investment tax credits may seem inappropriate. However, credits against Washington's Business & Occupation (B&O) Tax on gross income may incorporate the advantages of the income tax credit while avoiding the major disadvantages. One major **advantage** of a credit system is the extra incentive effect that a credit to tax liability has compared to a deduction from revenues; there is something intrinsically appealing about a direct reduction of taxes. A major **disadvantage** of the investment tax credit (as a tax incentive) is that there is often no benefit for small companies, since they have no tax liability that the investment tax credit could be used to offset. Even with Washington's new B&O Small Business Tax Credit, small manufacturing, wholesale, and retail businesses in the State of Washington can expect to owe B&O tax if their gross receipts exceed approximately $7,000 per month. Since this threshold is not large, many businesses start paying B&O tax at a fairly low level, so there is the potential for B&O tax credits for recycling to act as a true incentive (reduce or eliminate B&O tax).

Two types of income tax deductions were also found in a few states: rapid amortization[3] of recycling facilities in lieu of a normal depreciation deduction[4] and a bonus deduction in excess of the cost of recycled materials (e.g., 110 percent of the purchase price is deductible). Neither of these tax incentives are compatible with Washington's B&O tax system.

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[2] Income tax credits are generally structured as a direct credit against taxes for a specified percentage of the cost of equipment. For example, Colorado offers a credit against income taxes for 20 percent of the cost of qualified equipment utilizing postconsumer waste. Therefore, if qualifying equipment cost $100,000, the taxpayer would be allowed a reduction of income taxes of $20,000 ($100,000 x 20 percent). States generally set a maximum credit allowed per year (e.g., not to exceed income taxes due) and allow a carryover of unused credits to other years. In addition to the credit, full or partial depreciation is generally allowed on the equipment.

[3] Amortization is the systematic write-off (deduction) of the cost of an asset (either tangible or intangible) over a specific period of time. Rapid amortization, when available, is commonly spread over a period of 5 years. This is often much faster than the normal period for depreciating a large facility.

[4] Depreciation is the systematic write-off (deduction) of the cost of a tangible asset over a specified period of time (approximately the estimated useful life of the asset).

B. Research Findings

1. General Findings

a. Data collection

The data collection process for recycling tax programs yielded a large amount of information on the specific features of these tax laws. In addition, the interview process was extremely valuable in learning more about the types of programs and their success.

The tax subsidies available for recycling included general programs, applying to a variety of industries, and programs specific to the particular needs of the state, often dealing with a "hard-to-recycle" item from postconsumer waste.

Subsections 2 through 4 will provide general descriptions of recycling tax programs and some specific design features regarding each type of program. Subsection 5 will provide information about state agencies' views of the overall success of tax incentives for recycling. Case studies on detailed information from selected states of those interviewed can be found in Appendix A.

b. Selected information from phone interviews

The level of record keeping and evaluation of programs is inconsistent across states. Therefore, a collection of uniform information about program success was not possible. However, specific details from phone interviews with individual states have revealed some valuable information that can be useful to policy makers in Washington. Case studies of selected individual states where interviews were conducted can be found in Appendix A. The comments below are intended to be summary only.

i.) Intent -- The intent of the recycling tax incentives includes the following often overlapping objectives:

- To increase the capacity in the state for the use of recovered materials
- To encourage recycling activities in the state
- To increase expansions of recycling businesses in the state
- To improve the environmental condition of the state
- To encourage the use of goods made from reclaimed materials
- To discourage consumption of goods made from new materials

ii.) Administration: Recycling tax incentives are frequently administered jointly by two agencies. A typical arrangement starts with application to and certification by an agency involved in environmental issues or solid waste management (e.g., Department of Environmental Protection, Solid Waste Management Agency). Once certified, taxpayers may take advantage of the tax incentive, generally when filing the appropriate type of tax return with the state's revenue or taxation department. In one state where the entire process was administered by the Department of Revenue, there was considerable frustration because the staff there had no recycling background, and therefore had an extremely difficult and lengthy challenge in certifying recycling property. Generally, in the certifying agency, only a very small staff was needed: one person full time, or two or three people part time. The states that felt their programs were more successful frequently had one person full time to handle the certification process. This person typically received the applications, reviewed invoices (if part of the application process), visited sites, handled

public relations, and issued certifications. One state agency believed that if this one person's job was done well, that the burden on the revenue agency (subsequent administration) was minimal. Unfortunately, smooth, cooperative communication between the two agencies did not always exist. Many certifying agencies and state economic development offices had no information/feedback on the amount of credits or exemptions actually taken advantage of by taxpayers. The problems included lack of a legislative mandate to track the actual usage of credits/exemptions, tax forms being inadequate to collect the data (data either was not reported to the state at all or was lumped in with other credits/exemptions), and the certifying agency failing to obtain the taxpayer's tax identification number so that the revenue department could retrieve information about particular taxpayers without excessive searching and cost.

iii.) Indicators of success: The more successful tax subsidy programs contain some common features:

- Customer Orientation and Interagency Cooperation -- A cooperative working relationship between revenue and environmental agencies enhanced the success of tax subsidy programs. Environmental agencies from the more successful state programs consistently *understood* the tax incentives available and their implications. People working on the program must be effective and positive communicators - supportive rather than passive or negative - to companies and the public. Frequently, revenue departments viewed these programs as one more administrative burden. Additionally, in order to facilitate tracking of tax incentives, the certifying agency should include in their database information such as the tax identification number of the taxpayer granted approval for a tax incentive.
- Marketing -- Marketing is important to get the information out to businesses. Some states actively market tax programs by sending out letters and brochures. For example, Virginia makes sure that it communicates on a regular basis (generally quarterly), through mailings with members of professional organizations (especially CPA organizations), local coordinators of recycling programs, chambers of commerce, and economic development groups/agencies within the state. Mailings are generally straightforward and brief - designed to act as informative reminders of and to generate interest in various opportunities. Other states have relied on a series of information releases to the press and to professional organizations. Interestingly enough, one state refrained from marketing its tax incentives due to the concern that marketing would result in too many credits being applied for and issued, and therefore be too costly to the state.
- Technological assistance -- The combination of technological expertise (e.g., assistance in developing markets for recycled materials) with added tax incentives has made programs such as that in Arizona quite successful.

Agencies from several states, including Arkansas, say that the tax programs are at least partially responsible for bringing additional business into the state and keeping employment levels high. Other states said that tax incentives were given by businesses as a factor in choosing to retain an existing facility in that state. In addition, several of the programs, particularly in states that offer a number of different types of environmental tax incentives, such as Virginia, have encouraged voluntary investment in recycling equipment and facilities and have increased recycling overall.

2. Income tax credits for promoting recycling

a. General description of laws

Nineteen states offer income tax credits related to recycling equipment[5] or facilities,[6] where a percentage of the cost of an item is allowed as a credit to directly reduce the income tax liability of the taxpayer. Also, numerous state agencies were interviewed in an effort to capture additional information on the variety of programs in existence. Information from several of the states interviewed is presented as case studies in Appendix A.

b. Specific design features

i.) Definitions:

Waste: Generally, states refer to waste by such terms as "postconsumer" or "postindustrial" waste. The definitions may be very specific (e.g., paper, plastic, scrap metal and iron, glass and rubber) or very general (e.g., "any product generated by a business or consumer which has served its intended end use"). Several states also specifically exclude hazardous waste from their definition. Agencies in states with very specific definitions of waste have said that frequently one or two categories that should have been included in the definition were omitted. Conversely, agencies in several states with general definitions of waste have stated that some industries that did not need a tax subsidy (e.g., mature industries) were subsidized as result of the definition of waste.

Equipment:

Type of use: The three main categories of use that recur are collection, processing and manufacturing. Most states include processing and manufacturing in their equipment definition. Agencies in states that had tax incentives for only processing or manufacturing equipment, but not both, often felt both should have been included in their law. Collection of postconsumer materials is frequently excluded from the definition of equipment.

Level of use: In order to qualify for a tax incentive, recycling equipment or facilities must use recycled materials more than a minimal amount. Requirements for the collection of, processing of, or manufacture using recycled materials (according to the state's definition of equipment) ranged from primarily (over 50 percent) to exclusive use of the equipment or facility for the required purposes. Levels of 70 percent to 90 percent of the total production capacity were common. This eliminates the tax subsidy for equipment or facilities which involve primarily virgin materials.

Location where equipment is used: Most states specified that the equipment or facility must be physically located within the state.

Product:

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[5] Examples of recycling equipment include balers/conveyors for recycling paper, paper shredders, equipment for recycling asphalt, trucks/trailers for recycling beverage containers, equipment for recycling wood shavings for bedding, shredders/conveyors for recycling scrap metal, and equipment for automatically sorting different types of plastics.

[6] An example of a recycling facility might be an entire manufacturing factory or facility specifically in the business of processing recycled materials and/or manufacturing new products using recycled materials.

Proportion of source materials that must be recycled materials: States generally required that products manufactured must consist of either at least 25 percent or 50 percent postconsumer waste.

Proportion of recycled materials that must come from within the state: In addition to the above overall requirement for postconsumer waste, several states required that at least 10 percent of a product be composed of postconsumer waste generated in that state. This feature assures that the subsidy is linked with waste generated inside the state as opposed to subsidizing out-of-state recycling activities.

Purchase: Most states include only actual purchase acquisitions in their definition of a purchase of qualified equipment. However, several states include lease contracts for a period of at least 3 years regardless of whether title to the qualified equipment is transferred at the end of the lease period. This provides a tax incentive to small businesses who may be unable to secure financing for an equipment purchase, as long as they meet the lease requirements of the law.

ii.) Monetary design features:

Amount of credit: In general, investment tax credits to promote recycling range from 10 percent to 50 percent of the cost of equipment.

Maximum credit: Several states set a maximum dollar amount of credit that may be taken in total or a maximum credit per year. Common maximums are 25 percent, 50 percent, and 100 percent of the tax liability in any given year. Also, some states used a maximum credit or amount of qualifying equipment per taxpayer.

Carryover of unused credits: Some states allowed no carryover of unused investment tax credits, while most allowed a 5 to 7 year (sometimes up to 15 year) carryforward of unused credits. Others allowed unlimited carryover of unused investment tax credits.

Recapture of credits upon early disposition: Early disposition of recycling equipment may or may not result in a mandatory repayment of all or part of credits taken on that equipment. Surprisingly, slightly over half the states with investment tax credits for recycling had no provision for this type of recapture. One state amended its original law to include a recapture provision. The remaining states required recapture on a pro rata basis if the recycling equipment was disposed of before a set number of years had passed, generally ranging from 3 to 5 years.

3. Sales and use tax exemptions for recycling equipment

a. General description of laws

Research revealed that eleven states have or have had sales and use tax exemptions or rebates for recycling equipment, most implemented within the last 15 years.

b. Specific design features

Among the sales tax exemptions across the country, a variety of factors in the design of these exemptions exist:

i.) Definition -- Most states with sales and use tax exemptions cover equipment purchases. The definitions of qualifying purchases generally cover recycling equipment, but also on occasion cover the machinery and materials used in the construction of a recycling facility.

ii.) State and/or local exemption -- States generally give an exemption at both the state and local levels, but in one case only provide an exemption or major reduction in the sales taxes due at the state level. In the design of sales tax exemptions, there is also occasionally an option in existence which gives local governments control over their revenues by implementing a local option on sales and use tax exemptions.

iii.) Complete vs. partial exemption -- Most states completely exempt purchases of recycling equipment from sales tax. However, a reduced rate of tax is also an option (e.g., California applies a rate of 1 percent rather than the normal higher state sales tax rate on recycling equipment purchases).

4. Property tax exemptions for recycling equipment

a. General description of laws

Nine states have property (real property, personal property, or both) tax exemptions for recycling equipment and/or facilities, most implemented in the last 15 years.

b. Specific design features

i.) Definition -- The definition of property qualifying for a property tax exemption varies widely, including real property, personal property,[7] *or both. Two of the states designed targeted property tax exemptions to local recycling programs which benefit the public. Several other states simply referred to "recycling property" in their definitions.*

ii.) State and/or local exemption -- A few states give local governments the option of allowing property tax exemptions/abatements for recycling facilities or equipment (e.g., Illinois and Virginia). The control of revenue collection then is in the hands of the local government. Specific regional economic and environmental issues and citizen input may then affect the decision process.

iii.) Complete vs. partial exemption -- While most states with property tax exemptions allow a full exemption of the value of recycling property, a partial exemption is also used (e.g., Arizona).

[7] Personal property is all property which is not real estate.

5. Overall success of programs

a. Most important factors in a successful program

- Effective communication and marketing.
- Combination with other related programs (e.g., technology assistance programs, grant programs to cities and counties for recycling, economic development assistance programs, priority permit programs, low interest loan programs, job creation programs).
- Aiding established recycling companies in expansion.
- Personal initiative combined with either mandatory state recycling program or strong state support (joint cooperation of businesses and state government).
- Consultation for taxpayers in developing markets for hard-to-use materials, such as computer parts.

b. Most important factors in an unsuccessful program

- Lack of communication/marketing - businesses did not know that the tax incentives were available (In one state, the applications increased drastically this year because a state accountants' periodical had an article about the tax incentives.)
- Lack of effective communication skills by people working with the program and negative attitudes toward program and public.
- Tax incentive set too low, not strong enough on its own to be a factor in expansion or other business decisions.
- Too many dollars in credits granted to mature industries with pre-existing strong infrastructure.
- Landfills cheaper than recycling in rural states.
- Companies needing help, but lacking tax liabilities to take advantage of credit (e.g., startup companies).
- Lack of knowledge on how much of the postconsumer materials that were subsidized were already being recycled prior to subsidization.
- Lack of recycling background for people in Department of Revenue administering the program.

c. Possible changes to tax incentive programs recommended by state agencies

- Target tax credits to industries where a boost in the secondary recycling market is needed.
- Target tax credits to companies/industries where financial assistance would make a difference in the decision making of whether to acquire recycling equipment or to build a recycling facility.
- Either eliminate mature industries from eligibility for the tax incentive or make their tax incentive a lower percentage.
- Allow tax credits for leasing arrangements and third party purchases (small companies with limited profits and tax liabilities need assistance).

- Require applicants to file a notice/application prior to the purchase of recycling equipment in an effort to ensure that the tax incentive was a consideration in the decision to purchase the recycling equipment.
- Offer a fairly high credit on the first project by a particular company, then a reduced credit on subsequent projects from the same company.
- Make sure that the tax incentive has something for existing businesses as well as new businesses.
- Offer a greater incentive for manufacturers as opposed to processors.
- Structure programs in such a way that subsidization of out-of-state postconsumer waste is kept to a minimum.
- Funds programs adequately. (Oregon's $1.5 million per year to fund its plastics recycling credit is at approximately the optimal level for that program; for the last two years it has run out or nearly run out in December.)
- Set reasonable deadlines for receiving applications for a particular acquisition year. This allows for state budgetary planning, as well as attempts to make the tax incentive part of the decision making process, rather than an afterthought. (New Jersey has approved over $53 million in credits, and is still receiving some applications for equipment acquired in 1987.)
- Assign authority for the certification process to an agency other that the Department of Revenue, unless someone in that department has a good background in recycling equipment.
- Designate one person to administer the program in any given agency; too often the program is administered by several people as an add-on to their other duties.

III. WATER QUALITY

A. Types of Tax Programs in Use

1. Tax Subsidies

Across the country, a variety of tax incentives were found in use and can be categorized as follows:

- Property tax exemption
- Sales/use tax exemption
- Deduction for income tax purposes
- Income tax credits

Property tax exemptions and sales and use tax exemptions are the most common types of tax benefit available for pollution control investments and are compatible with Washington's tax system. In addition, two common types of income tax deductions are found in use throughout the country: rapid amortization[8] in lieu of a normal depreciation deduction[9] and outright deduction of pollution control investments in the year of acquisition. Neither of these tax incentives are compatible with Washington's B&O tax system, and therefore will only be discussed if certain design features of a law, such as a specific definition, are relevant to this report.

Because Washington does not have a traditional income tax system, income tax credits[10] may initially seem inappropriate. However, credits against Washington's Business & Occupation (B&O) Tax on gross income can capture the advantages of the income tax credit while avoiding the major disadvantages. One major **advantage** of a credit system is the extra incentive effect that a credit to tax liability has compared to a deduction from revenues; there is something intrinsically appealing about a direct reduction of taxes. A major **disadvantage** of the investment tax credit (as a tax incentive) is that there is often no benefit for small companies, since they have no tax that the investment tax credit could be used to offset. Even with Washington's new B&O Small Business Tax Credit, small manufacturing, wholesale, and retail businesses in the State of Washington can expect to owe B&O tax if their gross receipts exceed approximately $7,000 per month. Since this threshold is not large, there is still the potential for a B&O tax credit to act as a true incentive for businesses to make pollution control investments. Tax credits to the B&O tax for pollution control have been used in the past--the credit for pollution control equipment was designed to be spread out over a 25-year period.

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[8] Amortization is the systematic write-off (deduction) of the cost of an asset (either tangible or intangible) over a specific period of time. Rapid amortization, when available, is commonly spread over a period of 5 years. This is often much faster than the normal period for depreciating a large facility.

[9] Depreciation is the systematic write-off (deduction) of the cost of a tangible asset over a specified period of time (approximately the estimated useful life of the asset).

[10] Income tax credits are generally structured as a direct credit against taxes for a specified percentage of the cost of equipment. For example, Arizona recently passed a 10 percent tax credit (effective 1/1/95), which means that a business investing in pollution control equipment of $200,000 can take $20,000 directly off of its tax liability. States generally set a maximum credit allowed per year (e.g., not to exceed income taxes due) and allow a carryover of unused credits to other years. In addition to the credit, full or partial depreciation is generally allowed on the equipment.

2. Taxes and Fees

Levying taxes and fees on the use of pollutants is fairly common across the country and can be categorized in two ways:

- License and registration fees and taxes on pollutants.
- Taxes/fees on manufacturing or consumption by weight or value.

B. Research Findings

1. General findings

a. Data collection

The data collection process for water quality tax programs using *State Tax Notes* and the Commerce Clearing House Online Tax Service yielded a vast amount of diverse information on both tax subsidies and taxes and fees. A surprising number of states are using tax subsidies, rather than taxes and fees, as part of their environmental tax programs. The tax subsidies available for water pollution control include programs which are fairly general, applying to a variety of industries, and also programs which are very specific to the particular needs of the state, usually in the area of agriculture.

Taxes and fees on nonpoint sources of pollution exist across the U.S., but are not necessarily well defined nor easily pinpointed in state tax codes. The online search was primarily limited to nonpoint sources of water pollution runoff, primarily pesticides, fertilizers, and related products. In some instances, such taxes and fees do not show up as part of a state's tax code. For example, Iowa's taxes and fees associated with its groundwater protection plan are not part of the tax code in the state, and thus did not show up in the online search process. Instead, this program was discovered from the review of *State Tax Notes*.

Subsections 2 through 6 will provide general descriptions of tax programs and some specific design features regarding each type of program. Case studies in Appendix B reveal specific design information on states interviewed.

b. Findings from phone interviews

States selected for phone interviews were chosen from around the U.S. based on the types of details of their tax programs. An effort was made to select states that represent the various regions of the U.S., although the more interesting programs exist in the Eastern part of the country where higher population density has led to more severe environmental problems. Unique programs that targeted specific pollution control problems were included in the interview process. For example, several states in the southeastern part of the country have targeted agriculture as a specific problem area and have developed programs to counteract the polluting effects of nutrient (fertilizer) runoff. Both environmental and revenue agencies from approximately 20 states were contacted for additional information.

The level of record keeping and evaluation of programs varies in each state, making a collection of uniform information about programs difficult. The discussion in this section summarizes these findings. In addition, detailed case studies of selected individual states where interviews were conducted can be found in Appendix B.

i.) Administration: The administration of tax subsidy programs is generally smooth and minimal in cost. Some states charge fees for the certification process on pollution control property. Such fees cover the costs of administration. In its first year of property tax

exemption certificates (1994-95), Texas fee collections exceeded the cost of administering the program. Quite possibly the administration costs of these programs are perceived as low because federal and state regulations and the related monitoring procedures are already in place when pollution control tax programs are implemented. Therefore, the incremental cost of administering tax incentives is not ominous. For example, Wyoming's property tax exemption for pollution control property is part of its environmental quality statutes and causes very little incremental administrative cost to the agencies involved.

The administration process for the collection of fees and taxes also has been fairly simple. Often regulatory requirements are already in place for keeping track of pollutants and businesses handling pollutants in the state. Therefore, tax/fee collection procedures are not overly burdensome.

ii.) Indicators of success: The more successful tax subsidy programs contain some common features:

- Customer Orientation and Interagency Cooperation -- A cooperative working relationship, including a regular interchange of information, between revenue and environmental agencies enhanced the success of tax subsidy programs. In particular, environmental agencies from the more successful program states consistently understood the tax incentives available and their implications. An interview with South Carolina's Department of Natural Resources yielded very useful information on the tax benefits that work with the state's conservation tillage program. On the other hand, Alabama has three tax incentive provisions that are almost never used even though companies there regularly invest in pollution control property. Alabama's environmental agency lacked knowledge of the incentives available for pollution control investments. In addition, little enthusiasm existed for the program from the tax side and companies appear to be unaware of the existence of these tax provisions.

- Marketing -- Marketing is important for getting the information out to business. Montana State University's Extension Service has published a marketing brochure for its Pollution Prevention Program that provides information on all resources available to businesses. Tennessee actively markets its tax programs by sending out periodic letters and brochures. The revenue agency has a database of all manufacturers and can target certain companies with updates on relevant tax information. Rhode Island distributes a technical assistance directory (Rhode Island, 1991) that includes information on tax incentives; however, the tax information is incomplete. The directory lists the sales tax exemption for pollution control equipment, but fails to mention that the state allows a property tax exemption, a rapid amortization election, and an income tax credit.

- Technological assistance -- The combination of environmental technological expertise (e.g., education and demonstration of equipment) with added tax incentives has made programs in Virginia and South Carolina quite successful. Usually, the technological assistance would have been available under other environmental programs. The tax incentives serve to enhance them. For taxpayers in Montana, information on technological assistance can be found through the Pollution Prevention Program.

Most of the state agencies contacted were convinced that the tax incentive programs helped facilitate compliance with regulations. Other agencies indicated that the tax programs have made little difference in pollution control efforts. Agencies from several states, including Tennessee, indicate that the tax programs are at least partially

responsible for bringing additional business into the state and keeping employment levels high. In addition, several of the programs, particularly in states that offer a number of different types of environmental tax incentives (e.g., Virginia) have encouraged voluntary investment in pollution equipment and facilities and a reduction in pollution overall.

Several states indicated that innovative solutions were encouraged in pollution control. Virginia's Department of Mines, Minerals, and Energy encourages innovative solutions to pollution control and evaluates applications based on performance rather than by requiring prescriptive solutions. Interestingly, the theoretical literature has said that tax incentives inhibit innovation (e.g., Jenkins and Lamech, 1994); yet theory appears to ignore that policy implementation also can involve a customer-oriented approach.

User charges may have some direct effect on reducing water pollution, but the moneys collected often fund environmental programs, such as education, demonstration, and cleanup, which are more likely to be responsible for the reduction in pollution (e.g., Montana). Trying to separate out a cause and effect relationship between the tax itself and the reduction in usage of pesticides or fertilizers seems to be nearly impossible. However, the funds collected definitely have an effect on pollution levels in that they finance educational and demonstration programs.

2. Tax incentives for minimization of agricultural runoff

a. General description of laws

These programs exist in four states from the southeastern part of the country which offer tax incentives for equipment purchases that reduce or minimize runoff and leaching from nutrient (fertilizer) application to agricultural lands. These programs are very specific to the needs of the state. In South Carolina (S.C. Code Sec. 12-7-1215), the tax credit was designed specifically to encourage farmers to take advantage of new conservation tillage technology that cuts soil erosion and reduces water pollution from agricultural runoff. North Carolina (N. C. Gen. Stat. Sec. 105-130.36) and Virginia (Va. Code Sec. 58.1-334) also each have income tax credits for conservation tillage equipment. In addition, Virginia (Va. Code Secs. 58.1-337 and 58.1-436) has a separate income tax credit for equipment purchased as part of a state approved nutrient management plan that specifically improves the application of pesticides and fertilizers to minimize the runoff of pollutants into the waters of Virginia. Maryland (Md. Ann. Code Sec. 10-208) offers a deduction of all expenses for conservation tillage equipment investments.

b. Specific design features

i.) Definitions:

Maryland uses the most comprehensive definition of conservation tillage equipment, which means

> 1) a planter or drill that: is commonly known as a 'no-till' planter or drill; and is designed to minimize the disturbance of the soil in planting crops; **or**
>
> 2) liquid manure soil injection equipment that is designed to inject manure into the soil to reduce nutrient runoff; and includes a planter or drill or liquid manure soil injection equipment that attaches to or is pulled by equipment.

The first part of the definition is consistent with the other three states. Also, South Carolina includes drip/trickle irrigation systems as part of a broader renewable energy coverage.

Virginia's tax credit for purchase of advanced technology pesticide and fertilizer application equipment is very specific and is described in more detail as a case study in Appendix B.

ii.) Other design features: The credit amounts in these programs appear to be small in number; however, these amounts fit with the cost of the very specific equipment in question. For example, Virginia's credit for investment in pesticide and fertilizer application equipment is 25 percent with a maximum of $3,750 in any year; the environmental agency indicated that a $15,000 investment would be on the high side for an investment in such equipment.

For each of the *other* three programs (conservation tillage equipment credits), the design features are:

- Credit amount: 25 percent of all expenditures
- Maximum credit amount: $2,500 in any taxable year
- Carryover of unused credit: five years

3. Property tax exemptions for water and other types of pollution control equipment

a. General description of laws

Thirty-five states have property tax exemptions for pollution control investments. Some of the programs have been in existence since the 1960's (e.g., in Michigan) while other programs are relatively new (e.g., 1994 in Texas). Each state's law was analyzed for design features. Also, agencies in selected states were contacted in an effort to capture additional information on the variety of programs in existence. This information will be presented as case studies in Appendix B.

b. Specific design features

The following factors exist in property tax exemption programs across the country:

i.) Intent -- The intent of the pollution control exemption will affect its design. Four areas of intent were identified in this research:

- To facilitate compliance with regulations,
- To correct for any competitive disadvantages with other states' tax incentives,
- To assure that businesses should not be taxed on equipment purchases required by law, and/or

- To provide an incentive to invest in pollution control property beyond regulatory requirements.

ii.) Definition of pollution control property -- Most states with property tax exemptions have adopted a "facilities" concept of pollution control property which includes both real and personal property.[11] However, some states exempt only personal property from tax (e.g., Indiana). The definitions of qualifying facilities/equipment almost always include both water and air pollution control (Hawaii's program covers air pollution only).

iii.) State and/or local exemption -- States that collect property taxes at both the state and local level can choose to provide exemptions at either level or both.

- Local option -- A few states give local governments the *option* of allowing property tax exemptions for pollution control facilities or equipment (e.g., Alaska and Virginia). The control of revenue collection then is in the hands of the local government. Specific regional economic and environmental issues, local political issues, and citizen input may then affect the decision process.

iv.) Complete vs. partial exemption -- While most states with property tax exemptions allow a full exemption of the value of pollution control property, a partial exemption based on the salvage value is also common (e.g., Illinois and Louisiana). Also, some states adjust the value of pollution control property if the addition of such property results in a more efficient production operation or if it creates a salable product (e.g., Florida, Idaho, and Indiana).

v.) Apportionment -- When pollution control facilities are designed into the production process as an integral component, apportionment procedures are tricky. West Virginia ran into some apportionment problems (valuation of pollution control equipment vs. other plant equipment) associated with three facilities in the state, one of which created opposition within its community because the whole facility received the exemption even though pollution control was designed in the overall operation. The 1995 legislative session resulted in an amendment to W. Va. Code Section 11-6A-5 clearly setting up apportionment procedures.

vi.) Approval process -- Most of the states have an approval process which requires the taxpayer to file an application with a certifying agency.

- an annual certification process is in place in a few states where the valuation of pollution control property varies.
- certification that covers a longer period of time occurs more often, particularly in states that offer a full exemption.

4. Sales and use tax exemptions for water and other types of pollution control equipment

a. General description of laws

Twenty-nine states identified in the search to have sales and use tax exemptions for pollution control investments. As with property tax exemptions, some of these programs have been in existence since the 1960's (e.g., in Michigan) while other programs are relatively new (e.g., 1990 in Tennessee). The various laws were analyzed for design features. Also, selected

[11] Personal property is all property which is not real estate.

state agencies were interviewed in an effort to capture additional information on the variety of programs in existence. This information will be presented as case studies in Appendix B.

b. Specific design features

The following factors exist in sales/use tax exemption programs across the country:

i.) Intent -- The intents of the pollution control exemption for sales and use taxes are similar to those for property tax exemptions. In addition, several states have pollution control exemptions as part of a general manufacturing equipment exemption in order to eliminate the multiple taxation of products (e.g., Maryland). (This means that some of the states with manufacturing exemptions may have pollution control exemptions that are "hidden" in the law and thus not obvious.)

ii.) Definition of pollution control property -- The sales and use tax exemptions in most states cover equipment purchases. In addition, some states include maintenance and supplies expenditures (e.g., Tennessee), or other additional costs of pollution control activities. The definitions of qualifying purchases almost always include both water and air pollution control. In addition, leased equipment may also qualify for exemption (e.g., Missouri). One of the advantages of the lease option is that start-up companies without funds to invest directly in these assets can still receive a tax benefit.

iii.) State and/or local exemption -- States generally give an exemption at both the state and local levels. In the design of sales tax exemptions, the option exists to give local governments control over their revenues by implementing a local option on sales and use tax exemptions.

iv.) Complete vs. partial exemption -- Most states completely exempt purchases of pollution control property. However, a reduced rate of tax is also an option (e.g., Mississippi taxes at a reduced rate of 0.01 percent).

v.) Approval process -- Most of the states have an approval process which requires the taxpayer to file an application with a certifying agency. States can choose to approve the exemption prior to purchase, or offer a refund for taxes already paid. Most states include provisions for both scenarios. However, in the case of Tennessee, refunds in the future against the suppliers' sales and use taxes due is the only option. This scenario poses problems for out-or-state suppliers that may not have a future use tax liability for a long period of time, if ever.

5. Income tax credits for water and other types of pollution control equipment

a. General description of laws

Five states offer income tax credits related to pollution control equipment or facilities. A percentage of the cost of an investment is allowed to directly reduce the income tax liability of the taxpayer. Two of the provisions are very new. California's effective date was the beginning of 1994. Arizona's new law was effective on January 1, 1995. Oregon's provision will expire at the end of 1995.

b. Specific design features

i.) Definitions: Three of the states with credits offer them for pollution control investments as part of a broader definition of manufacturing equipment (California, New York and Rhode Island). The specific definitions for pollution control usually apply only to equipment or tangible personal property.

Whether a state includes leases as well as purchases in the definition is another option. Colorado's tax credit (expired in 1983) included leases in the definition. The advantage of including leasing arrangements is that small businesses that may not be able to secure financing for a purchase can still take advantage of the tax incentive.

ii.) Monetary design features:

Amount of credit: In general, investment tax credits to promote recycling range from 2 percent to 50 percent (e.g., Oregon) of the cost of equipment.

Maximum credit: Several states set a maximum dollar amount of credit that may be taken in total or a maximum credit per year. Arizona's maximum is $750,000 per taxpayer per year for 1995 and 1996, and $500,000 in all years after.

Carryover of unused credits: Some states allow no carryover of unused investment tax credits, while others allow a 5 to 7 year carryforward.

Recapture of credits upon early disposition: Recapture provisions also exist as an option for situations where the equipment ceases to be used for the intended purpose prior to the end of its credit time period.

Other provisions: Often the use of a tax credit precludes using other tax benefits, such as the amortization election in lieu of depreciation that is common in some states. In the case of Oregon, however, depreciation or amortization deductions may still be taken.

6. Taxes and fees for pollution control

a. General description of laws

As discussed in a previous section, getting a complete picture of the states' use of taxes and fees was difficult since fees often are not included with the *tax* laws of states. Also, many of these taxes/fees tend to be hidden in overview lists of all taxes/fees of a particular state. This research was limited to taxes and fees on nonpoint sources of pollution, primarily pesticides and fertilizers. Excluded were taxes and fees for point sources of pollution, such as hazardous waste and other waste dumping, sewage, and other polluting discharges. Also excluded were taxes on gas and oil since these are commonly used by all states and the federal government.

b. Specific design features

During the phone interviews it was determined that taxes and fees are often levied to cover the cost of environmental programs rather than to affect behavior of the manufacturers/distributors/consumers of substances. Therefore the amount of the tax or fee is not necessarily set high enough to reflect the "true" cost of pollution damage. The environmental programs resulting from the funding, including education and demonstration, have been credited more often with affecting a reduction in pollution than the tax itself.

i.) Types of taxes/fees:

- License and registration fees and taxes -- Pesticide and fertilizer dealers, manufacturers and/or distributors are often charged a license fee and/or a registration fee for each type of substance produced or distributed. In the case of Montana, part of the registration fee for pesticides is allocated to the waste disposal collection program and can be refunded if pesticides are disposed of correctly.
- Taxes/fees on manufacturing or consumption by weight or value -- Several states charge a fee on fertilizers and other substances based on weight or value. In Montana, most of the fee is attributable to the cost of fertilizer inspection. This state also set up a grant program for weed control by assessing a surcharge on herbicides for the control of noxious weeds until the fund reached a cap. Iowa charges a tax on fertilizers by the ton, depending on the nitrogen content. Florida charges a water quality tax on nonpoint pollutants (e.g., solvents, ammonia, pesticides and chlorine) which fluctuates up and down depending on the balance in the Water Quality Trust Fund.

ii.) Point of taxation: The specific point of taxation in the product lifecycle[12] is an important consideration because it can affect the feasibility of administration and the behavior of producers, distributors, and users if the dollar amount of tax is set high enough. Choosing the point of consumption as the taxation point for nonpoint pollutants might have the most direct effect on consumer behavior since the consumer would see a direct relationship between the tax and the consumption. Yet administratively, this taxation point has been found to be impossible to manage.

As an example, Arizona passed a provision for a surtax on retail sales of environmentally hazardous products in 1990, dubbed "the Drano tax." While in theory this law is compatible with the "polluter pays" idea and might have created some incentives for consumers to reduce their use of polluting substances, it was repealed in the next year because the state could not figure out how to administer the tax. An important design difference between this tax and most of the other pollution taxes reviewed as part of this paper is the point of taxation. In choosing retail sales as the point of taxation, Arizona needed to determine how to administer the tax over a large number of locations and consumer goods. The complex list of products in Arizona's law would indeed be nearly impossible to manage since even grocery stores selling laundry detergents and oven cleaners would be among those with liability.

In other states with environmental taxes and fees, the point of taxation is more often the entry point into the state either through distribution or manufacturing. Washington's tax on hazardous substances is collected in this manner. Usually the regulatory requirements

[12] The product lifecycle is defined as all stages and locations in the life of the product from the raw material stage to final consumption and disposal.

are already in place to allow for tracking systems on the flow of pollutants at earlier points in the product lifecycle. For example, Montana has a database on registered pesticide and fertilizer dealers which makes the tax/fee collection and monitoring process very easy.

Appendix A - Case Studies: Recycling

For all case studies: Unless a formal evaluation is specifically mentioned, all information on the success of a particular program was self-reported by the state agencies.

1. New Jersey's investment tax credit for recycling equipment (N. J. Rev. Stat. Section 54:10A-5.3)

a. Intent: "The recycling tax equipment program is intended to divert recyclable materials from landfills while providing recycling businesses an incentive to create new markets and new jobs, increasing production, attracting investment, and sending a signal of a positive, cooperative business climate. Investment tax credits are considered a positive factor by industry when evaluating business expansion in New Jersey." (New Jersey, 1995)

b. Specific design features

- Credit against corporate business tax.
- Credit is 50 percent of the cost of the recycling equipment (less the amount of low interest loans provided by New Jersey to finance acquisition of equipment).
- A maximum of 20 percent of the credit may be deducted in any one year; unused portions of credit are used in subsequent years.
- Investment tax credit is part of the 1987 New Jersey Statewide Mandatory Source Separation and Recycling Act (expires 12/31/96), which also includes low interest loans and loan guarantees and a sales tax exemption for business recycling equipment.

c. Administration: Equipment must be certified as recycling equipment by the Department of Environmental Protection. The application for certification must address the following:

- identification of the corporation's activities in New Jersey
- a brief description of corporation's recycling activities and an explanation of what the equipment does relative to the transportation, processing, or manufacturing of post consumer materials
- an original photograph of the equipment (advertising pictures are not acceptable)
- a separate application for each type of equipment (identical equipment can be on the same application)
- verification of payment for equipment, both the voucher and payment documents
- notarized application
- identification of end-markets for recyclables by specific company name
- For vehicles, must be used exclusively for transportation of postconsumer waste material

.

d. Success of program:

Why the program has worked:

- Investment tax credit is part of the 1987 New Jersey Statewide Mandatory Source Separation and Recycling Act (expires 12/31/96), which also includes low interest loans, loan guarantees, and a sales tax exemption for business recycling equipment.
- Program has helped improve compliance with the mandatory recycling law, primarily because the state had to comply with the law - so they had to find markets for the postconsumer waste collected.
- Recycling tax credits have made a big difference in retention of at least one large plant in New Jersey.

Costs to state:

- Cost of administration: The Department of Environmental Protection has two people who work on this program part-time; the administration cost to Treasury is negligible.
- Lost Tax Revenues: As of the end of 1994, a total of $53.5 million in recycling tax credits had been certified as part of the program. As of the end of 1992, approximately $2 million of the tax credits had actually been taken on tax returns.

Extent to which tax provision has been used:

- Number of applications: Information on the applications approved in 1991 through 1994 were available, and are divided into transportation of source separated recyclable materials, processing of source separated recyclable materials, and manufacturing.

Year	Transport	Processing	Manufacturing	Applications Approved	Number of Corporations
1991	39	121	52	**212**	**54**
1992	43	71	13	**127**	**46**
1993	10	69	32	**111**	**41**
1994	5	44	16	**65**	**25**
Total	**97**	**305**	**113**	**515**	**166**

- The annual reports attribute decreases in applications to the state's economic outlook. However, the 1995 applications through May have already exceeded the total 1994 applications. This 1995 increase is believed to be due to an article in a New Jersey accountants' periodical on the recycling tax credits available.
- The 1991 through 1994 annual reports also include a distribution of recycling tax credits approved (by percentage of tax credit dollars per year) by material:

Material	1991	1992	1993	1994
Aluminum	10.0%	12%	4%	
Asphalt, Concrete & Wood	10.6%		3%	3%
Corrugated	16.1%	19%	18%	17%
Drums				5%
Food Waste		1%		4%
Glass & Plastics	13.8%	18%	20%	12%
Hazardous Wastes		3%		
Metals	26.9%	28%	24%	22%
News and Other Paper	22.7%	16%	26%	34%
Tires		2%	5%	3%

e. Changes to tax incentive program recommended by state agencies

- Make applications prospective rather than retroactive.
- 50 percent investment tax credit is very expensive, especially when market forces are already strong; consider setting up a fund with a maximum funding level and have companies apply for "a piece of the pie." [Editorial comment: This could create innovative solutions for recycling.]
- Administration has always been done by someone who has other job responsibilities - should have a dedicated person to administer the program.

2. Oregon's investment tax credit for plastics recycling (Or. Rev. Stat. Section 315.324)

a. Specific design features

- Credit against income tax
- Credit is 10 percent of the certified cost of the investment in a business that collects, transports, or processes reclaimed plastics or manufactures a reclaimed plastic product.
- In any year, the credit may not exceed the tax liability; unused portions of credit may be carried forward for 5 years.

b. Administration: Equipment must be certified as recycling equipment by the Department of Environmental Quality. Once the Department of Environmental Quality certifies that the investment has met the statutory and administrative requirements, the certification is sent to the Department of Revenue.

c. Success of program

Why the program has worked:

- Industry has formed, in essence, a partnership with state government. This joint cooperation has been a very good communication tool in making this program successful.
- The state has pushed hard in creating this provision for investments in plastics recycling and in marketing.
- Markets for plastics recycling were already in existence - the problem was in getting the collection systems in place.

Costs to state:

- Cost of administration: The administrative cost to the Department of Environmental Quality is one fourth of the time of an Environmental Specialist plus overhead costs - approximately equal to a total cost of $31,000 per year to the Department of Environmental Quality.
- Lost Tax Revenues: Oregon has set a maximum of $1.5 million in credits to be certified each year. This appears to be an optimal level, as the maximum was reached in December of 1993, nearly reached in 1994, and is expected to be reached in 1995. Those who apply after the maximum funding level has been reached are advised to apply again next year.

Extent to which tax provision has been used:

- Number of applications: Information on the applications and amounts approved in 1991 through 1994 are presented in the following table.

	1991	**1992**	**1993**	**1994**
Number of applications approved	4	4	18	16
Amount of credits certified	$200,000	$292,000	$1,500,000	$1,400,000

- The low number of applications in the early years was due to the initial narrow interpretation of the law. Subsequent interpretations were more liberal, and therefore have generated more applications.
- Approximately 2/3 of the tax credits approved have been taken.

d. Changes to tax incentive program recommended by state agencies

- No changes were recommended. The program is both successful and user-friendly.

3. California's investment tax credit for recycling equipment (Cal. Code Sections 17052.14 and 23612.5)

The information in this case study comes from the report of the California Integrated Waste Management Board to the California Legislature on the Impacts of the California Recycling Equipment Tax Credit Program.

a. Specific design features

- Credit against income tax
- Credit is 40 percent (20 percent in first year, 15 percent in second year, and 5 percent in third year) of the cost of qualified property, with unlimited carryforward of unused credits.
- "Qualified property" means machinery or equipment located in California, which is used by the taxpayer exclusively to manufacture finished products composed of at least 50 percent secondary waste material with at least 10 percent of which is composed of postconsumer waste generated from within California. Maximum of $625,000 of costs per taxpayer are eligible for the credit.
- Applied only to qualified property purchased and placed in service from 1/1/89 through 12/31/93.

***b. Administration*:** Program required equipment to be purchased and placed in service before taxpayer could apply for credit. Applications were submitted to and certifications issued by the Integrated Waste Management Board.

c. Success of program

Why the program didn't work:

- There were substantial delays in reaching full implementation of the program. The five year program became effective on 1/1/89, but the statutes were not chaptered until September 1989, the staff to implement the program was not hired until September 1990, and the regulatory process to certify equipment was not completed until September 1991. By that time there were only two years left for the program.
- Business and tax consultants were unfamiliar with material feedstock analysis (amount of virgin material used compared to the amount of recovered material, source of the material, whether it would have otherwise gone to a landfill, etc.) required by the law. This resulted in significant uncertainty by taxpayers as to whether their application would be approved. The law was sufficiently complicated that it took a fairly long lead time for tax consultants to become familiar with the law and to feel comfortable about recommending it to clients.
- Research by the Integrated Waste Management Board indicated that 63 percent of the equipment was purchased prior to applicant knowing about the credit. Therefore the credit was frequently an unexpected bonus, rather than a factor in the decision to acquire recycling equipment.
- A tax credit offers little incentive to start-up businesses with little or no tax liability.

- To qualify, businesses must have owned and operated the recycling equipment. Small business who could not obtain financing to purchase the equipment, and therefore chose to lease, did not qualify under the law.

Costs to state:

- Cost of administration: California's report did not include information on administrative costs.
- Lost Tax Revenues: The total amount of credits approved by the Integrated Waste Management Board under the recycling equipment tax credit program were $13,982,135. The Franchise Tax Board indicated that $2,127,816 in credits were claimed on tax returns from 1989 through 1993. The remainder is expected to be claimed in subsequent years.

Extent to which tax provision has been used:

- Number of applications: 194 applications were received, 144 were certified, 28 denied (10 due to lease rather than purchase of equipment), and 22 were still pending at the time the report was prepared. Information on the materials recycled, approved applications, allowable credits, and tons of secondary materials used annually are presented in the following table.

Material Recycled	Number Approved	Allowable Credits	Tons Used Annually
Asphalt/Concrete	40	$4,813,792	4,755,430
Compost	35	1,731,633	321,932
Fiber (textiles)	1	250,000	13,000
Glass	5	953,985	162,502
Metals	31	2,796,288	550,925
Oil Filters	1	103,200	3,240
Paint	1	3,299	16
Paper	12	1,144,467	263,882
Plastic	13	1,599,724	20,669
Rubber	2	262,339	8,770
Soil	1	62,000	20,000
Wood	2	261,408	35,491
Totals	**144**	**$13,982,135**	**6,155,857**

d. Changes to tax incentive program recommended by report

- The tax credit should be allowed for third party investors and in lease purchase agreements. This would allow businesses with limited capital to obtain new equipment.

- Manufacturers have developed, and are continuing to develop, refillable containers for beverages and other consumer products. These containers require specific cleaning equipment to prepare the containers to re-enter the market place. The tax credit should be expanded to qualify equipment which cleans and processes refillable containers.
- The largest portion of equipment certified was in the asphalt/concrete recycling industries. To better target the tax incentives, secondary materials eligible for the credit should be more carefully selected to focus on those emerging industries needing financial assistance. For example, asphalt, pavement, and scrap metal other than white goods and steel cans could be excluded, or the priority materials from the Market Development Plan (mixed paper, compostables, and unsorted plastics) could be targeted. This way, funds would go directly to material recycling most in need of market development.
- Most of the applicants were unaware of the credit prior to the purchase of the equipment, so the law should require a prefiling by the taxpayer. A requirement that the taxpayers file a notice with the Integrated Waste Management Board prior to the purchase of the equipment would ensure the tax credit was a consideration in the decision to purchase recycling equipment.

4. Arizona's Environmental Technology Tax Incentive Program
(Ariz. Rev. Stat. Sections 43-1076, 43-1080, 43-1164, and 43-1169, and S.B. 1421)

The information in this case study comes from the White Paper: Update on Administration of the Arizona Department of Commerce Environmental Technology Tax Incentive Program, December 27, 1994, and the Arizona Recycling Market Development Update, January 24, 1995.

a. Specific design features:

- Two separate credits against income tax (may not claim both on the same equipment).
- Credit is
  - — 10 percent of the construction costs of a qualified environmental technology facility, or
  - — 10 percent of the cost of qualified recycling equipment
- 15 year carryforward of unused credits.
- Recapture of portion of credit if property is disposed of or ceases to qualify within 5 years of acquisition.
- "Qualified environmental technology facility" means the location or additional capital investment in a manufacturing, production, or processing facility in Arizona that:
  - — Is owned (or leased for at least 5 years) by the manufacturer, producer, or processor
  - — Is used predominantly to do any of the following:
    - Sort, store, prepare, convert, fabricate, manufacture, or otherwise process finished products consisting of at least 90 percent recycled materials.

- Prepare, fabricate, manufacture, or otherwise process finished products that are powered exclusively with solar or other specific renewable energy.
- Prepare, fabricate, manufacture, or otherwise process raw material or intermediate product exclusively through a hydrometallurgical process where at least 85 percent of the process solution used to produce the finished product is recycled on site for additional production.

— Costs, or is expected to cost, an aggregate of at least $20 million of new capital investment in Arizona within 5 years after construction begins or commencement of installation of improvements.

- Applies to qualified environmental technology facilities effective from 7/17/93 to 6/30/96, and to recycling equipment acquired after 12/31/92.
- Qualified environmental technology facilities also qualify for technological assistance, sales tax exemptions (for construction, equipment, and certain operating costs) for 10-15 years, and reductions in property taxes (for both real and personal property) for 20 years.
- "Recycling equipment" means new or used equipment purchased during the year and used exclusively to process post-consumer select solid waste materials (paper, plastic, scrap metal and iron, glass and rubber) and manufacturing machinery used exclusively to manufacture finished products composed of at least 25 percent postconsumer select solid waste material. (Requirements to get credit for recycling equipment are not as stringent as requirements for environmental technology credit.)

b. Administration: Applications are submitted to and certifications issued by the Department of Commerce. Information on certifications is provided to the Department of Revenue by the Department of Commerce.

c. Success of program: *This portion of the case study* focuses on the tax credit for "Qualified Environmental Technology Facilities," *since this was the primary information provided by the Arizona Department of Commerce.*

General operation of program:

- Although the Environmental Technology Tax Incentive Program became effective in mid 1993, it seems to have not been well marketed until September 1994 when a "Jobs Through Recycling" grant was received from the U.S. Environmental Protection Agency and a new coordinator was hired to coordinate Arizona's Recycling Market Development Program. The reports provided refer to the quarter ended December 1994 as the first full quarter of the "tri-agency funded Arizona Recycling Market Development Program." The three funding agencies are: Arizona Department of Commerce, Arizona Department of Environmental Quality, and the U.S. Environmental Protection Agency.
- There was quite a bit of activity in the September - December 1994 quarter. Once the funding was obtained and the Program established, it appears to have made a solid start.
- Nine applications have been received so far. The low number of applications for the tax credit for Environmental Technology Facilities is believed to be primarily due to the requirement that an expected minimum cost of $20 million over a five year period is required in order to qualify.

- The program for Environmental Technology Facilities includes not only income tax credits, but technological assistance (e.g., recycling market development), sales tax exemptions for 10-15 years, and reductions in property taxes (for both real and personal property) for 20 years.
- Arizona is actively working on building a database of recycling company prospects. 69 new client contacts were made during September - December 1994, and 39 qualified leads were generated. Arizona is also in the process of developing an "Arizona Market Development Tool Kit."

Costs to state:

- Cost of administration: Arizona's reports do not include information on administrative costs.
- Lost Tax Revenues: Income tax credits of $41.12 million (10 percent of $411.2 million of investment) has already been approved for Environmental Technology Facilities. Another $44.17 million in income tax credits is pending.

Extent to which tax provision has been used:

- Since the program was established, a total of 9 companies have *applied* for certification. These 9 companies project new investment of $852.9 million, and a direct employment gain of 974 new jobs.
- As of 12/27/94, 5 of the 9 companies had received certification, certification is pending for the other 4 applicants. The table below contains information on the types of facilities, application status, amount of investment projected, and number of jobs projected.

Type of facility	Status	Investment	No. of jobs
Steel manufacturing (100% recycled)	certified	$75.0 million	150
Solvent extraction - copper production	certified	$150.0 million	240
Acid mfg. for pollution control	certified	$60.0 million	13
Solvent extraction - copper production	certified	$82.5 million	50
Solvent extraction - copper production	certified	$43.7 million	200
SUBTOTAL - CERTIFIED		***$411.2 million***	***653***
Solvent extraction - copper production	pending	$205.0 million	100
Solvent extraction - copper production	pending	$110.0 million	80
Solvent extraction - copper production	pending	$66.0 million	141
Paper manufacturing (100% recycled)	pending	$60.7 million	*(retain 475)* 0
TOTALS		**$852.9 million**	**974**

- Rural Arizona has been the primary beneficiary of the program. Rural communities are anticipating significant levels of local property tax revenues (even with the reductions in property tax rates) from these new enterprises.

Appendix B - Case Studies: Water Quality

For all case studies: Unless a formal evaluation is specifically mentioned, all information on the success of a particular program was self-reported by the state agencies.

1. Maine's exemptions for property tax (Me. Rev. Stat. Ann. Sections 655 and 656) and sales/use tax (Me. Rev. Stat. Ann. Section 1760)

a. Specific design features

Property tax exemption

- Real estate: air and water pollution control facilities
- Personal property: air and water pollution control facilities
- Definition specifies that facility has the purpose of "reducing, controlling, eliminating or disposing" of pollutants but does not include prevention.

Sales/use tax exemption

- Water and air pollution control facilities
- Definition specifies that facility has the purpose of "reducing, controlling, eliminating or disposing" of pollutants but does not include prevention.

***b. Administration*:** The certification process is the same for both property and sales/use tax exemptions. Applications for water pollution facilities come to the Division for Water Resource Regulation. The application specifies whether the applicant is requesting an exemption for property tax, sales/use tax or both. For property tax exemptions, the municipal assessor makes an evaluation. In addition, there is a public notice process where the citizens can voice concerns. This type of local control over revenue collection from property taxes is common to several of the states analyzed in this study.

c. Success of program

Incentive effects of tax provisions:

- Program has helped improve compliance with regulations.
- Program has improved competitive advantage over other states in maintaining and attracting industry. (The package that Maine offers to industries includes more that only pollution control tax benefits.)
- Tax benefits are "part of the sales pitch" for bringing businesses with pollution control needs to the state.
- According to one representative of a state agency, tax benefits have been very important for medium to large companies and have encouraged some to install pollution control facilities that exceed the minimum regulatory requirements.
- According to another representative of a state agency, there is no incentive to exceed minimum regulatory requirements provided by tax benefits.

- Maintaining local tax levels has sometimes been a problem when property tax exemptions are granted.
- These tax incentives have encouraged innovative solutions to pollution control, particularly in the pulp and paper industry.

Costs to state:

- Benefits of reducing pollution have exceeded costs to the state.
- Cost of administration: The fee to apply for the exemption(s) is $270. This amount exceeds the cost of routine certification by a small amount (e.g., a routine application mentioned was a farmer's manure pit). However, the more innovative solutions to pollution control that come primarily from the pulp and paper industry take longer to review and thus have a higher administrative cost.
- Lost Tax Revenues: Maine also does not have a very accurate accounting of lost revenues from the exemptions. However, an approximate assessed value for pollution control facilities for fiscal 1989 is $31,000,000 and for fiscal 1990 is $38,000,000. Some of the local communities may have tracked this information.

Extent to which tax provision has been used:

- Number of applications: Maine does not have a system in place for tracking the number of applications. One agency directly involved in water pollution requests stated that they have certified seven this year (January through May 1995) and have three pending. The total certificates granted over the past 15 months is about 12-15.
- A number of companies are not taking advantage of the tax benefits, possibly because of the passive marketing techniques currently used.
- Why so few applications? There were conflicting opinions on why more companies have not applied for the exemptions. While one agency representative thought that the administrative process was fairly easy, another suggested that the public notice process for property tax exemptions might be deterring companies from taking advantage of the tax subsidies because they may not want the public to know what they are doing.

d. Changes to tax incentive program recommended by state agencies

- Include "preventing" pollution in the definition that currently covers only "reducing, controlling, eliminating or disposing" of pollutants.
- Improve marketing of program.
- Make the benefits more accessible to small businesses, including reducing the administrative hassle of the current application process.

2. South Carolina's tax credit for conservation tillage equipment (S.C. Code Sec. 12-7-1215)

a. Intent: *This law was written specifically to promote water quality by encouraging farmers to invest in new conservation tillage equipment that reduces agricultural runoff and erosion.*

***b. Specific design features*:** The conservation tillage credit is part of an overall incentive for investing in energy conservation and renewable energy production equipment. The

definition includes conservation tillage equipment, certain drip/trickle irrigation systems and dual purpose combination truck and crane equipment. The specific details of the credit are as follows:

- Credit amount: 25 percent of all expenditures
- Maximum credit amount: $2,500 in any taxable year
- Carryover of unused credit: five years

***c. Administration*:** The program is administered in the Land Resources section of the Department of Natural Resources and is part of an overall program that includes technological assistance through education and demonstration of conservation tillage equipment. The state agency interviewed said that there is no incremental administration cost in that agency for the tax credit and believes that the administrative activities in the tax department are minimal.

d. Success: This program has been very successful in reducing water pollution in the state of South Carolina. Ten percent of their agricultural lands are now using conservation tillage practices which help to cut erosion by 80 percent and reduce nutrient runoff. Although the dollar cost of the credit was not readily available, an estimated 100 to 200 farmers have applied each year.

The program contains the three elements that are common to successful tax incentive programs: technological assistance, effective marketing, and customer orientation.

3. Tennessee's sales/use and property tax exemptions (Ten. Code Ann. Sections 67-6-102 and 67-5-604)

Tennessee recently made its sales and use tax exemption permanent. The phone interview primarily covered specific details about that exemption. However, it is difficult to separate out the success of that program vs. the property tax exemption program. Therefore, they will both be included in this case study.

a. Specific design features

Sales and use tax exemption:

- Definition is very broad, including air or water pollution control facilities, chemicals and supplies used in such facilities, septic systems, dry cleaners (50 percent exempt), and automotive paint and body shops.
- The sales or use tax is first paid, then claimed as a credit against any future sales or use tax.

Property tax exemption:

- Definition includes air and water pollution facilities as well as hazardous and toxic waste facilities.
- Valuation is partial, using salvage value which can "never exceed 0.5 percent of the acquisition value of the facilities."

b. Administration: This program is administered by the Tennessee Department of Environment and Conservation. The purchaser must first buy the property and then file for an approval by the department. Once the approval is given, the supplier of the property must refund the purchaser who then claims a credit against future sales and use taxes. This

procedure is particularly cumbersome and has caused some problems. For example, a particular out-of-state contractor claimed a refund on use taxes but could not get it because he had no current sales or use tax liability and probably would not have one in the future. The legislature did not authorize direct refunds of the taxes.

c. Success: During the 1995 legislative session, the sales and use tax exemption was made permanent (it originally had a sunset date) presumably because lawmakers consider this program to be successful. The state agency contacted indicated that while the tax incentives do not necessarily encourage investment beyond regulatory requirement, this program, along with other manufacturing tax benefits, *has* helped to encourage businesses to locate in Tennessee. For example, the state recently attracted Nissan because of tax incentives. In addition, an agency representative credits that state's low unemployment rate of 4.2 percent to tax benefit programs.

When asked about administrative costs, this state has experienced no cost because it has gained business as a result and would not have had the investments otherwise. Lost revenues from the sales and use tax exemption amounted to $400,000 during the last fiscal year.

Marketing efforts for this program have included mailings of legislative activities and special notices sent to manufacturers included in a database. In addition, Tennessee has a strong manufacturers association that distributes information.

d. Changes recommended by state agencies

- Change the sales and use tax exemption to a front-end process, rather than a refund process.
- Include noise pollution in the definition.
- Give department the authority to refund sales and use taxes.

4. Texas's property tax exemption for pollution control equipment (Tex. Code Ann. Section 11.31)

The property tax exemption for pollution control equipment is the result of an initiative approved by the voters in November 1993.

a. Intent of law

- To correct for any competitive disadvantages in Texas's pollution tax benefits,
- To make compliance with regulations easier, and
- To assure that businesses should not be taxed on equipment purchases required by law.

b. Specific design features

- Exempts from property tax all or part of property constructed, purchased or installed to meet government requirements for pollution control.
- Exemption is not available for services provided or the manufacturing or production of products which prevent, monitor, control or reduce pollution.
- Excludes motor vehicles.

***c. Administration*:** The Texas Natural Resource Conservation Commission is responsible for administering this tax benefit program. Companies make application and pay one of

three possible fees. The Tier I fee is $100 and is available for applicants whose equipment is part of a pre-determined list of equipment. The Tier II fee of $500 is paid by applicants whose equipment is not on the list, but expect the property to be 100 percent pollution control. The third tier fee of $1,000 covers equipment that is only partially used for pollution control and is not on the pre-determined list. Three technical staff people are required to evaluate and assess the property in question over a period of four months. While this is a tax exemption at the local level, state-level government is in charge of administration to keep administrative costs low.

d. Success: *This program is so new (effective date 1/1/94) that its success would be difficult to assess. However, the state is keeping track of information that are useful indicators of success.*

Number of applications: The state received 794 applications in the first round (Dec. 1994 - April 1995). Twenty-two applications were rejected and 18 were withdrawn.

Administrative cost: The state has just completed the first round of applications for this new program. The administrative cost of the three technical staff was $100,000 and the application fees collected were $153,000. In future years, considerably more applications are expected (possibly double) and the administrative cost is expected to go up. The fee in the first tier is adequate to cover the administrative cost. However, there is some question as to the adequacy of the fees in the other two tiers because of the complexity of review needed for equipment that is not on the pre-determined list.

Estimated lost revenues: The figure from lost revenues comes from estimates given by applicants and thus may not be completely accurate: $1.1 billion over the next five years.

e. Changes to tax incentive program recommended by state agencies

- Currently, the law does not include investments that *reduce* pollution. The Natural Resource Conservation Commission is trying to get this wording (pollution reduction) included in the law. Commercial facilities that reduce pollution should also qualify for exemption.
- The reuse of emissions which currently only qualifies for a 50 percent exemption should also be eligible for 100 percent exemption.
- The law should create incentives for better technology
- Motor vehicles should also be included in the definition. The conversion of a fleet of vehicles to propane use currently does not qualify for the exemption.

5. Virginia's pesticide and fertilizer application equipment tax credit (Va. Code Sections 58.1-337 and 58.1-436)

This tax credit applies to corporations and individuals who purchase "advanced technology pesticide and fertilizer application equipment" which allows for more precise application of agricultural nutrients and minimizes pollutant runoff from farmlands. This program's success is based on the technological assistance, marketing, and a customer oriented approach provided by the Department of Conservation and Recreation.

a. Intent of law: Nutrient runoff was stated to be the most prevalent form of water pollution in Virginia. This tax credit is given as part of an overall effort to help farmers better manage the application of pesticides and fertilizers to minimize pollutant runoff for the protection of drinking water, surface waters, and the Chesapeake Bay. The program is primarily

voluntary; however certain farmers are required by other regulations to implement nutrient management plans.

b. Specific design features

- Credit amount: 25 percent of all expenditures
- Maximum credit: $3,750 or total amount of tax due in the year of purchase, whichever is less
- Carryover of unused credit: five years
- Qualifying equipment:
  - — Sprayers for pesticides and liquid fertilizers;
  - — Pneumatic fertilizer applicators;
  - — Monitors, computer regulators, and height adjustable booms for sprayers and liquid fertilizer applicators;
  - — Manure applicators; and
  - — Tramline adapters.

c. Administration: Technical assistance to develop a nutrient management plan is provided to farmers in combination with this tax credit through Virginia's Department of Conservation and Recreation. Field staff look at all aspects of a farmer's operations, including the nutrient content of waste. The tax credit is an added incentive to encourage farmers to get the assistance and requires only about 10 percent of the administrative time from the whole program. The department uses ten field nutrient management specialists to help farmers develop nutrient management plans. Marketing the program has been an important role for the department, and they recently completed two brochures on the nutrient management plan which highlights the tax incentives available.

d. Success of program: According to the Department of Conservation and Recreation, the whole program has been very successful, with benefits of the program definitely exceeding costs. The tax credit is a major part of its success because of the added motivation for farmers to make changes. Interestingly, certain religious groups in the state that have shunned government assistance in other forms have been willing to participate in this program and accept this tax credit. The investments in manure spreaders have been especially successful in reducing nutrient runoff. The cost of this program has been considerably less than that of their cost-share program which encourages the seeding of small grain cover crops on highly erodible or high leaching index land.

Since the effective date (January 1, 1990), the Department of Conservation and Recreation has received over 300 application worth $375,000 in credits.

Incentive effect is minimized if farmers do not have enough state tax liability in order to take advantage of credit.

Summary of Key Elements in the Program:

- Technical assistance provided along with tax incentive.
- Marketing efforts get information out to potential users of tax incentives.
- Knowledgeable and enthusiastic staff understand the tax effects of program.

6. Virginia's sales/use tax and property tax exemption for pollution control (Va. Code Sections 58.1-608 (3)(I) and 58.1-3660)

This case study includes information from both a formal report (Virginia Sales and Use Tax Expenditure Study, 1990, which will be referred to as "Virginia, 1990") and phone interviews. Because it would be difficult to completely separate the success of each program in controlling pollution, both sales/use tax and property tax exemptions are discussed.

a. Intent of law

Sales and use tax exemption -- This exemption is intended to promote "voluntary pollution control by lowering the capital costs associated with installing pollution control equipment and [ease] the burden placed on businesses by government mandated pollution control programs" (Virginia, 1990).

Property tax exemption -- This exemption is a local option granted by the state. A state agency described the intent as "an old fashioned incentive" that relieves the taxpayer of paying taxes on equipment and facilities that are required by law.

b. Specific design features: The definitions are similar for both property tax and sales/use tax exemptions and have possibly the broadest definitional scope in the country. The report on sales/use taxes indicates that the definition includes an entire pollution control facility and its component parts including "grass and shrubs, a lighting or ventilation system and buildings that house the pollution control equipment itself" (Virginia, 1990).

c. Administration: Water pollution equipment and facilities are certified by the State Water Control Board while air pollution equipment and facilities fall under the authority of the State Air Pollution Control Board. A recent exception to this is that now the Department of Mines, Minerals and Energy (DMME) certify exemption requests for coal and oil and gas production equipment and facilities.

d. Success: The formal evaluation of this program indicates that Virginia has been successful in meeting the intent of its laws. Every few years they evaluate the sales/use tax program and will complete a new evaluation by the end of 1995. The agency representatives are knowledgeable and enthusiastic about these program. The DMME encourages innovative solutions to pollution control and evaluates applications based on performance rather than by requiring prescriptive solutions. The local option for property tax exemption allows localities with heavy concentrations of polluting industries to choose this incentive. Currently, 20 out of 95 counties and 13 out of 41 cities have adopted the option. Because these are separate taxing entities, the state does not keep track of the dollar amount of lost revenues.

Cost to state of sales/use tax exemption:

- The report indicates that the state and local tax revenues that would be generated if the exemption were repealed for Fiscal Year 1992 was *estimated* to be $13.9 million.
- The benefits of the provision were estimated to outweigh the cost of the program (The report indicated that the estimated value of the exemption for Fiscal Year 1992 was $14.2 million.)

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