国内公的資金

Domestic Funds

Environmental Taxation in the United States

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U.S. Experience with Market-based Environmental Instruments

The U.S. experience with market-based environmental instruments such as environmental taxes and tradable emission permits has been highly successful. The two most important examples of existing market-based measures in the U.S. are the ozone-depleting chemicals (ODC) tax and the sulfur dioxide permitting system created by the Clean Air Act Amendments of 1990.

Title IV of the 1990 U.S. Clean Air Act Amendments (CAAA) instituted an emission allowance trading program to regulate emissions of sulfur dioxide (SO_2) from electricity generating facilities. The industry is allocated a fixed number of total allowances, and firms are required to hold one allowance for each ton of sulfur dioxide they emit. Firms are allowed to transfer allowances among facilities or to other firms or to bank them for use in future years. The cap accommodates an allowance bank, so that in any one year, aggregate industry emissions must be equal to or less than the number of allowances allocated for the year plus the surplus that has accrued from previous years.

The program is universally acknowledged to be a success, having reduced the total cost of achieving SO_2 emission reductions by a third to a half relative to the earlier regulatory approach.[1] Actual emission reduction costs are below the most optimistic pre-adoption cost estimates, as unexpected but important market alternatives, notably the greater use of low-sulfur western coal, have allowed large cost savings. This, of course, is precisely what one would hope for from a market-based system.

In an even more dramatic success, taxes on ozone depleting chemicals were used to gradually phase out virtually all use of ODCs in the U.S. In 1988, the EPA found that a 50 percent reduction in CFC production could be accomplished by 2000, but at a social cost of about $3 billion over that period, with a further steady rise in years after 2000.[2] Just four years later, a reestimate of the costs found a remarkable result: complete elimination of CFC production would cost 30 percent less on a per-unit basis than had been estimated for the fifty percent reduction years before.[3] Not only that, but instead of the social costs of environmental control increasing steadily with time, the EPA found that many of the CFC substitutes now in use or expected to be in use by 2000 will be cheaper than the CFCs they replace, providing a net social benefit.

The lesson of this experience is that economic and engineering models which assume that the future will look much like the past are inadequate to project the consequences of economic shifts caused by environmental policies when those shifts are large enough to induce significant technological restructuring. Under these circumstances, technological response is likely to greatly reduce costs below

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[1] Schmalensee, Richard et al. (1998): "An interim evaluation of sulfur dixode emission trading." Journal of Economic Perspectives, 12(3):53-68. Stavins, Robert N. (1998): "What can we learn from the grand policy experiment? Lessons from SO2 allowance trading." Journal of Economic Perspectives, 12(3):69-88.

[2] EPA, "Regulatory Impact Analysis: Protection of Stratospheric Ozone," (June 15, 1988) (review draft).

[3] ICF Incorporated for the U.S. EPA, “Regulatory Impact Analysis: Protection of the Stratospheric Ozone,” (Washington DC: June 4, 1992).

those forecast using only known technologies. This is especially true where the environmental policy prescribes a goal (such as by setting emission caps) or provides an incentive (such as a an emission tax), rather than specifying the technology to be used.

Although these measures have been effective at achieving environmental goals at the least cost, neither one is a major source of revenue. In the case of the ozone-depleting chemicals tax, the failure to produce revenue is a direct result of the success of the tax in phasing out the set of ODCs, which are now produced at such low levels that the tax, though still in effect, is applied to a very small tax base. The sulfur dioxide permit system is not a major source of revenue because almost all of the permits were given away to electric utilities and other large stationary sources, rather than being auctioned or sold. Allocation of permits to a facility is based primarily on a fixed and declining percentage of the historic emission levels from that facility.

Carbon Charges in the United States

For reasons of domestic politics, it is unlikely that such a comprehensive national carbon charge will be enacted in the United States within the next few years. However, as discussed in section below, there is a substantial likelihood that such a comprehensive charge system will be enacted in one or more states. States have been called "the laboratories of democracy," and enactment of such a charge at the state level is likely to accelerate the introduction of such charges at the national level.

Although some NGOs, such as redefining Progress/Center for a Sustainable economy and Americans for Equitable climate solutions continue to advocate a comprehensive national tax or permitting system, a more piecemeal approach is being advocated by most environmental NGOs. This includes a tradable carbon permit system and/or tradeable renewable portfolio standards for electric utilities, tradable Corporate Average Fuel Economy standards for automobiles, and some combination of incentives, regulation, and voluntary measures for the remainder of the economy.

Tradeable carbon emission permits for utilities were originally supported by President Bush as part of a four-pollutant tadeable permit system, which would cover sulfur dioxide (SO_2), nitrogen oxides (NO_x), mercury, and carbon dioxide (CO_2) emissions. However, after his election, Bush retracted his earlier support for carbon controls as a part of this system. Since that time, there have been efforts to introduce a tradable carbon permitting system as a stand-alone measure. The most important and comprehensive of these measures is the Climate Stewardship Act (S.139) introduced in January 2003, generally known as the McCain-Lieberman bill.

This bill would establish a mandatory cap on emissions of six global warming pollutants (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) by electric generators and other large emitters,[4] enforced by a market-based cap-and-trade system of emissions allowances, patterned after the sulfur dioxide emission allowance trading program of the 1990 Clean Air Act. The allowances of refiners and importers of transportation fuels are based on the emissions that will occur when their fuels are consumed in transportation. The affected sectors account for approximately 85 percent of total U.S. emissions.

Under the Act, caps on the total greenhouse gas allowances are reduced in two steps, reaching 2000

[4] Large emitters are defined a facilities that emit at least 10,000 tons of carbon dioxide (or an equivalent amount of other global warming pollutants).

levels by 2010, and 1990 levels by 2016. Allowances will be allocated with a mix of approaches based on criteria specified in the Act. Some emission allowances will be given to companies without charge. The rest will be allocated to a non-profit Climate Change Credit Corporation created by the Act, which will use proceeds from the sale of allowances to promote new clean energy technologies and to protect consumers, dislocated workers and communities. The bill also provides incentives for firms to reduce emissions early or to take on more stringent emissions limits.

The bill offers additional flexibility to help moderate costs by allowing the use of a limited number of "off-system credits" – up to 15 percent of a source's emission in 2010 and 10 percent in 2016 – derived from non-regulated sectors in the United States (such as forest and farm carbon sequestration), from emission reductions by smaller firms, and carbon reductions made in other nations that have adopted pollution caps.

Revenue from the bill is uncertain, as it depends on administrative decisions relating to permit allocations, on the elasticity of demand for various fuels, on other energy and environmental policies pursued, and other factors. However, the revenue could be substantial.

The Climate Stewardship Act is expected to be offered as an amendment to the energy bill now under consideration in the Senate. Passage this year is considered unlikely, though many observers believe that ultimate passage of some modified version of the Act is probable.

Cost estimates for the McCain-Lieberman bill vary substantially, but are generally in the range of plus or minus 0.6 percent of GDP. See Table 1 below.

Table 1. Cost Estimates for the Climate Stewardship Act

Source	Impact (% GDP)
U.S. EIA (2)[5]	-0.6
U.S. EPA (unpublished)[6]	-0.01
MIT (2003)[7]	-0.1
Tellus Institute (2003)[8]	+0.4

In addition to the McCain-Lieberman bill, various other market-based policies for reducing greenhouse gas emissions have been proposed. Two of the most important of these are the renewable portfolio standard for the electric utility sector and tradable corporate average fuel economy (CAFE) standards for automobiles.

A renewable portfolio standard (RPS) is a requirement that electric utilities generate a specified proportion of their total electricity from non-hydro renewable energy sources, such as wind, solar,

[5] EIA, Analysis of S.139, the Climate Stewardship Act of 2003. U.S. Department of Energy, Energy Information Administration, SR/OIAF/2003-02. Washington, DC (June 2003). http://www.eia.doe.gov/oiaf/servicerpt/ml/pdf/sroiaf(2003)02.pdf

[6] The authors of the U.S. Environmental Protection Agency report were ordered to halt work before the peport could be released. New York Times (July 29, 2003).

[7] Paltsev, S., J. Reilly, H. Jacoby, A. Ellerman, KH Tay. Emissions Trading to Reduce Greenhouse Gas Emissions in the United States: The McCain-Lieberman Proposal. MIT Joint Program on the Science and Policy of Global Change. Report No. 97 (2003).

[8] Alison Bailie, Stephen Bernow, William Dougherty, & Michael Lazarus. Analysis of the Climate Stewardship Act. Boston MA: Tellus Institute (July 2003).

biomass and geothermal. A U.S. Energy Information Administration study found that the U.S. could adopt a national RPS of 20 percent by 2020 with an increase in energy bills of only 0.7 percent.[9]

The Energy Policy and Conservation Act of 1975 required passenger car and light truck manufacturers to meet Corporate Average Fuel economy (CAFE) standards. Under the standard, the fuel economy ratings for a manufacturer's entire line of passenger cars must average at least 27.5 miles per gallon (mpg) for cars and 20.6 mpg for light trucks. If a manufacturer does not meet the standard, it is liable for a civil penalty of $5.00 for each 0.1 mpg its fleet falls below the standard, multiplied by the number of vehicles it produces. Manufacturers earn "credits" for exceeding CAFE standards, and these credits can be used to offset fuel economy shortfalls in the three previous and/or three subsequent model years.

Two vehicle fleets are defined for CAFE purposes: vehicles with 75 percent or more U.S./Canadian content are considered to be "domestics"; vehicles with less than 75 percent U.S./Canadian content are considered to be "imports". If a manufacturer has both "domestic" and "import" fleets, each fleet must comply separately with the CAFE standard.

A recent study by the National Academy of Sciences[10] (NAS) found that the fuel consumption of automobiles could be reduced by on the order of 20 percent at a net cost savings over the planning horizon. Larger or smaller savings were available depending on assumptions about consumer discount rates, gasoline prices, and other factors. The NAS report suggested that domestic and imported fleets be merged and that auto manufacturers be allowed to trade CARE allowances so that the production of cars with higher or lower fuel efficiency could be done by the manufacturer that is best at producing cars of that type.

Other National Environmental Charges

In the universe of reasonably well-studied environmentally-motivated charges, two tax bases with the largest potential as sources of sources of revenue are energy consumption and land. However, many charges with more limited potential as revenue sources could nonetheless be important as environmental instruments or for the financing of environmental monitoring, services, and regulation, and in paying for measure to ensure the continued viability of forests, fisheries, parks, and other forms of natural capital.

The next table shows the magnitude of some environmental charge options as estimated by the Congressional Budget Office (CBO). The rates on these taxes are somewhat arbitrary, and higher tax rates may be justifiable from an environmental perspective, particularly if the goal is to achieve behavioral targets.

Alcohol and cigarette excises and repeal of some special tax loopholes for extractive industries (mining and petroleum) are also shown for comparison purposes.[11]

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[9] Energy Information Administration, Analysis of Strategies for Reducing Multiple Emissions from Electric Power Plants: Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, and Mercury and a Renewable Portfolio Standard, SR/OIAF/2001-03 (June 2001). http://www.eia.doe.gov/oiaf/servicerpt/epp/pdf/sroiaf(2001)03.pdf

[10] Transportation Research Board. Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards, National Academies Press, (2002).

[11] For a more comprehensive survey of Federal tax subsidies to environmentally damaging activities, see Dawn Erlandson et al., Dirty Little Secrets, Washington DC: Friends of the Earth (1998). http://www.foe.org/res/pubs/pdf/dls.pdf

Table 2. National Estimates for Several Environmental Charges		
Base of the charge	Rate	Average Annual Revenue ($mill.)
Cigarettes*	increase 50 cents/pack	6,560
Alcoholic beverages*	increase from $13.50/proof gal. to $16	4,740
Repeal exploration expensing and percentage depletion for extractive industries*	N/A	2,800
SO_2 emissions, stationary sources not covered by acid rain program*	$200/ton	520
NO_x emissions not covered by 1998 Ozone Transport Rule*	$1,500/ton	4,200
Extend gas guzzler tax to vans & SUVs evaluated by vehicle rather than model type*	Formula based on mpg, max of $7,700 for mpg < 12.5	580
One-time fee for average auto emissions of VOCs, NOx and carbon monoxide*	average $300/car or light truck, depending on emissions	3,520
Volatile Organic Compound (VOC) emissions from large & small stationary sources**	$2100/ton	10,500
Course (size > 2.5 μm) particulate emissions (stationary source)**	$500/ton	400
Reinstate Superfund toxic chemical taxes*		1,340
Organic water pollutants causing biological oxygen demand (BOD)***	average 66 cents/lb., organic solids, varying proportional BOD	2,420
Toxic water pollutants***	$32.35/toxic pound-equivalent	220
Sources: *CBO, *Budget Options,* Washington DC: Government Printing Office (March 2003). **CBO, *Budget Options,* Washington DC: Government Printing Office (March 2001). ***CBO, Reducing the Deficit: Spending and Revenue Options, Washington DC: Government Printing Office (March 1997).		

Cutting subsidies

Substantial subsidies of fossil fuel production and other environmentally damaging activities exists in the United states. The tax subsidies alone amount to more than $4 billion per year.[12] No truly comprehensive estimate of the tax and non-tax subsidies to polluting activities has been done.

The most comprehensive study of oil subsidies in the U.S. found a long list of subsidies, including the cost of defense of Persian gulf oil supplies, provision of the strategic petroleum reserve, tax breaks for domestic oil exploration and production, support for oil-related exports and foreign production, provision and maintenance of coastal and inland shipping routes, unfunded and underfunded liabilities, and royalty losses. Many of these costs are difficult to estimate, and the study reports a range of possible subsidy values from $16 to $35 billion/year.[13]

Although it is unambiguous that cutting many of these subsidies would be a sensible first step toward a sensible energy policy, there is virtually no political momentum for such cuts. Indeed, bills recently before Congress suggests that the U.S. is more likely to increase these subsidies than to reduce them, based on concerns over national security and domestic energy supply.

Carbon Charges at the State Level

The state budget crisis. U.S. states face a budgetary crisis of unparalleled magnitude. The state budget gap is the largest in history and increasing rapidly.[14] In between November 2002 and January 2003 alone, estimated state budget gaps have increased by 50 percent, primarily as a result of lower than anticipated revenues.[15] Fifteen states have budget gaps of at least 5% of their total state budget, and four states have budget gaps exceeding 10%.[16] Moreover, it is now clear that these budget shortfalls will be even larger next year, when rainy-day funds and other resources that states are using to meet this year's budget shortfall are exhausted.[17] Some states have not yet completed deficit forecasts for fiscal 2004. But of those that have, 36 are projecting budget gaps in excess of 5%, 18 have gaps above 10%, and four have gaps above 20%.[18]

States have adopted a wide range of budget strategies, but in the states with the worst shortfalls, it will be nearly impossible to balance the budgets (as states, unlike the federal government, are required to do) with budget cuts alone.[19] Efforts to do so involve draconian cuts in education and human services, and even such absurdities at the Missouri governor's order that every third light bulb in state offices be unscrewed to save electricity. In response, for the first time in recent memory, large coalitions in support of tax increases, often led by parents and educators, have emerged in many states. Governors of at least

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[12] Dawn Erlandson et al., Dirty Little Secrets, Washington DC: Friends of the Earth (1998). http://www.foe.org/res/pubs/pdf/dls.pdf

[13] Douglas Koplow & Aaron Martin. Federal Subsidies to Oil in the United States. Cambridge, MA: Industrial Economics, Incorporated (1998).

[14] February 5 by the National Conference of State Legislatures.

[15] Id.

[16] Alaska, California, Colorado, and Oregon.

[17] For example, a number of states are meeting current budget shortfalls largely by issuing bonds against the future stream of revenues from the tobacco settlement. Obviously, this can only be done once.

[18] Alaska, Arizona, California, and New York.

[19] For example, in fiscal 2003 California is facing a budget deficit of $8 billion, about 11% of the state budget. Although this is the largest state deficit in the history of the United States, it is dwarfed by the projected deficits for fiscal 2004, which nearly triple to $26 billion -- 30% of the state's budget New York's budget gap in 2003 is a more modest -- but nonetheless huge -- $2.5 billion, or about six percent of the budget. But next year, this gap is forecast to rise to a staggering $9.3 billion, about 24 percent of the state's budget. Governor Pataki has has stated that, though he opposes taxes, he will support fee increases to provide needed revenue. It is possible that carbon or pollution charges can be characterized as fees.

15 states have announced that tax increases will be necessary this year.[20]

In many states, the effort to achieve a balanced budget is considerably complicated by pledges by state governors or key legislators not to raise taxes, or not to raise major taxes such as income and sales taxes. Most states that are looking at tax increases are looking at sin taxes such as those on cigarettes and alcohol.[21] Other common approaches are increases in a variety of administrative or user fees.

Advantages of environmental charges. In this context, there has been a substantial recent upsurge in interest in environmental charges and fees. This is true for three distinct reasons.

First, environmental charges are justified as environmental measures that raise revenue incidentally. At least since the 1920 publication of The Economics of Welfare by Pigou,[22] economists have known that charging polluters for the social damages of pollution is necessary for the economy to work efficiently. When environmental taxes are accompanied by eco-efficiency measures or used to cut other distorting taxes, they can increase employment or GDP while improving the environment.[23]

In addition, the "polluter pays principle" -- that the cost of damages caused by environmental degradation should be born by the polluter and not the public -- is regarded by many as a moral imperative. This view has been formally adopted by the Organization for Economic Cooperation and Development (OECD) nations, including the United States.[24] It is also the position of the environmental justice movement[25] and much of the environmental community.

Second, because these charges have a primarily environmental motive, and need not be structured as taxes, it is possible that they may not be politically characterized as taxes. The most famous example of this is that the first President Bush declared that environmental charges were not taxes for purposes of his "Read my lips: No new taxes" pledge, even when they were collected by the taxing authority and enacted in the tax code. Currently, several governors who have pledged not to allow new taxes are

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[20] Arkansas, California, Connecticut, Delaware, Georgia, Idaho, Kentucky, Missouri, Montana, Nebraska, New Jersey, Nevada, North Dakota, Ohio, and South Dakota.

21 In the fifteen states where governors have supported tax increases, they have generally suggested a tax to increase. All but Montana have included cigarette taxes on the list of tax increases. Seven states (Con, Ky, Mo, NJ, Nev, Oh, SD) are looking at taxes on business, four states (Ark, Ca, Idaho, Mont) to sales taxes, four (Ga, NJ, Nev, SD) to alcohol, amusement or hotel taxes, two to gasoline (Ky, Oh) taxes, two (Del, ND) to estate taxes, and only one (Ca) to income taxes. Thus, the most popular taxes have been taxes on consumption or on unhealthy or luxury activities. In this setting, carbon and other pollution fees and charges appear to be plausible elements in the mix.

[22] A.C. Pigou, The Economics of Welfare, London: Macmillan (1920).

[23] For a U.S. study combining environmental tax reform with technology promotion, see James Barrett & J. Andrew Hoerner, Clean Energy and Jobs: A Comprehensive Approach to Climate and Energy Policy, Washington DC: Center for a Sustainable Economy & the Economic Policy Institute (2002), http://www.sustainableeconomy.org/cleanenergy.htm. For similar studies at the state level, see S. Bernow, M. Fulmer, I. Peters, M. Rush, and D. Smith, Carbon Taxes With Tax Reductions in Minnesota, Boston: Tellus Institute (1997); George Bacus, The Effects of Green Taxes and Carbon Tax Shifting on the State of Minnesota, Denver: Policy Assessment Corporation (1996); Steve Bernow et al., Ecological Tax Reform: Carbon Taxes With Tax Reductions in New York, (Tellus Institute in conjunction with Pace University Center for Environmental Legal Studies, June 1997).For a survey of European studies that makes a similar finding, see J. Andrew Hoerner & Benoit Bosquet, Environmental Tax Reform: The European Experience, Washington DC: Center for a Sustainable Economy (2001).

[24] OECD, Recommendation of the Council on Implementation of the Polluter-Pays Principle, Recommendation C(74)223, adopted Nov. 14, 1974, reprinted in 14 ILM 234 (1975); see also Sanford E. Gaines, "The Polluter-Pays Principle: From Economic Equity to Environmental Ethos," 26 Texas International Law Journal 463-96, 476 (1991).

25 See, e.g. First People of Color Leadership Summit, "Principles of Environmental Justice: A Call to Action" (1991), reprinted in Toxic News, Portland, OR: National Lawyers Guild (December 1993). See also Douglas A. McWilliams, "Environmental Justice and Industrial Redevelopment: Economics and Equality in Urban Redevelopment," 21 Ecology Law Quarterly 705 (1994).

including increases in environmental fees or charges in their budgets.

And finally, many states are asking their departments, including the environmental departments, to support more of their budget from administrative fees and charges. For example, the Governor of Illinois has proposed raising almost $700 million from as-yet unspecified administrative and user fees.

A wide range of possible rationales support environmental charges in a policy sense, and a similarly wide range of potential coalitions could support such charges politically.[26]

Revenue potential. Table 3 below shows the approximate[27] revenue by state from a carbon charge or permit fee of $20 per ton of carbon. This is less than a fifth of the carbon charge enacted by many European nations, and is well within the current range of interstate variability on energy taxes and prices. Nationally, such a charge would raise roughly $34 bill. in 2003. A carbon permitting system for the electric utility system alone would raise on average about 40% of a carbon charge applying to all users, though this percentage will vary by state. These taxes are easy to administer and can be structured to protect the competitiveness of energy-intensive industries in the state.[28]

Table 3. Approximate Revenues from a $20/ton Carbon Charge

State	1999 Carbon (MMTC)	Revenue ($Mill.)
Alabama	35.9	791
Alaska	11.03	243
Arizona	21.47	473
Arkansas	17.09	377
California	94.83	2,091
Colorado	21.32	470
Connecticut	10.09	222
Delaware	4.3	95
D.C.	1.13	25

[26] J. Andrew Hoerner & Gina M Ericson, “Environmental Tax Reform in the States: A Framework for Assessment,” State Tax Notes pp 311-19 (July 31, 2000)

[27] These figures are based on 1999 fossil fuel consumption. Since 1999, national fuel consumption has grown by roughly 1.2 percent per year (simple). Note further that these figures are based on fossil fuels burned in the state. We believe that state carbon charges should include carbon used to produce imported electricity and exclude carbon used to produce exported electricity. Failure to do this would provide utilities with an incentive to import all their power, substantially disrupting electrical generation with no environmental benefit. Thus these revenue estimates are too low for states that import large amounts of electricity, like California and Vermont, and too high for states that export large amounts of electricity, like Ohio or Montana. A more precise estimate of carbon charge revenues for a state can be made through the use of the State Carbon Tax Model (SCTM), a spreadsheet-based model that uses readily available national data. The SCTM can be downloaded from http:\www.sustainableeconomy.org.

[28] Muller, Frank, and J. Andrew Hoerner. "Greening State Energy Taxes: Carbon Taxes for Revenue and the Environment." Pace Environmental Law Review 12, Fall 1994: 5-60. See also Hoerner, J. Andrew, Alternative Approaches to Offsetting the Competitive Burden of a Carbon/Energy Tax. Washington, D.C.: American Council for an Energy Efficient Economy, 1997.

Florida	60.83	1,341
Georgia	43.11	950
Hawaii	4.25	94
Idaho	4.11	91
Illinois	58.58	1,291
Indiana	59.85	1,319
Iowa	20.65	455
Kansas	19.43	428
Kentucky	36.43	803
Louisiana	51.16	1,128
Maine	4.86	107
Maryland	21.16	466
Massachusetts	17.16	378
Michigan	52.69	1,162
Minnesota	25.02	552
Mississippi	17.05	376
Missouri	35.17	775
Montana	8.37	185
Nebraska	11.11	245
Nevada	10.91	241
New Hampshire	4.55	100
New Jersey	32.1	708
New Mexico	15.1	333

Table 3. Approximate Revenues from a $20/ton Carbon Charge

State	1999 Carbon (MMTC)	Revenue ($Mill.)
New York	52.31	1,153
North Carolina	37.19	820
North Dakota	13.82	305
Ohio	69.75	1,538
Oklahoma	25.04	552
Oregon	11.24	248
Pennsylvania	64.05	1,412
Rhode Island	3.08	68
South Carolina	20.93	461
South Dakota	3.63	80

Tennessee	32.36	713
Texas	166.56	3,672
Utah	16.6	366
Vermont	1.77	39
Virginia	29.62	653
Washington	23.11	509
West Virginia	30.65	676
Wisconsin	27.97	617
Wyoming	16.79	370

Case studies: California and Oregon. The states for revenue estimates have been made for the most comprehensive set of environmental charges are California and three Pacific Northwest state: Idaho, Oregon & Washington. However, it should be observed that revenue estimates have been prepared for only a small proportion of the potential environmental charges. For instance, we do not yet have state-level revenue estimates for most of the Congressional Budget Office's environmental revenue options, listed in the table above.

Revenue estimates for three environmental charge packages were estimated by Redefining Progress in the report *Greening the Golden State*.[29] Although this report focuses on the possibility of a tax shift (raising new environmental taxes and using the revenues to reduce existing state taxes), the revenue estimates should be approximately correct for a revenue-raising package of environmental charges as well. The most comprehensive of the three packages raised nearly five billion dollars. It is summarized in the table below. The report discusses the feasibility and rational for these charges in detail.

Environmental Charge Options for California	
Description of charge	**REVENUE ($ Mill)**
State carbon tax of $20 per ton	1,940
State land surtax (on assessed value) of 0.2 percent	1,490
Water consumption fee of $20 per acre-foot	800
Solid waste disposal charge of $14 per ton	440
A 10 percent tax on fertilizer, lime, and pesticides	160
New state sales tax revenue as a result of the carbon tax	70
Repeal of several tax breaks for the oil industry	50
Total new taxes	**4,950**
Source: *Greening the Golden State*[30]	

[29] Hamond, M. Jeff, with Gary Wolff, Clifford Cobb, and Mark Frame. Greening the Golden State: A Tax Reform for California's Future, San Francisco: Redefining Progress (1999) http://www.rprogress.org/publications/greengold/greengold_execsum.html

[30] Supra note 29.

Northwest environment Watch estimated the revenues from a package of environmental charges, for Idaho, Oregon, and Washington, in their report *Tax Shift*.[31] These results are summarized in the table below:

Environmental Charge Options for the Northwest			
Description of charge	**REVENUE ($ Mill)**		
	Idaho	**Oregon**	**Washington**
Carbon tax, $10/ton	46	110	228
Point source emissions: $11/ton CO, $5950/ton SOx, $2400/ton NOx, $2200/ton VOCs, $8/lb toxic emissions (individual charges adjusted for toxicity), $1300/ton BOD	161	276	790
Farm chemicals: $8/lb pesticides, (individual charges adjusted for toxicity), $75/ton fertilizer	224	130	327
Motor vehicles: rates equivalent to those on stationary sources	162	373	602
Traffic congestion charge (Portland & Seattle only)	0	500	1000
Water use: $20/acre-foot	288	150	168
Hydropower: 0.5 cents/kWh	183	668	1471
Timber: $20/1000 board-feet	32	115	100
Fish & Game: double existing	23	28	27
Minerals: 10% of value	40	26	61
Total	1,159	2,376	4,774
Source: *Tax Shift*[32]			

We have not included certain revenues reported in the original report in the table above. These include a land value tax that replaces existing property taxes in a revenue-neutral manner, and an increase in existing taxes on pollution and natural resources.

Some recent initiatives. Many of the states with the most serious deficits have already authorized substantial increases in environmental fees or charges to finance environmental protection, although the exact shape and magnitude of these charges remains undetermined in some cases. This has been true even in states whose governors have made a "no new taxes" pledge. By authorizing such fee increases to finance environmental expenditures, they have freed up general revenue funding for other urgent social priorities.

Groups of environmentalists in several states have met to assemble packages that include revenues from environmental fees and savings from cuts of environmentally harmful spending projects. These include the Green Watchdog report in California,[33] a study by Friends of the Earth and others in Washington

[31] Alan Thien Durning & Yoram Bauman, Tax Shift, Seattle, WA: Northwest Environment Watch (1998).

[32] Supra note 31

[33] Friends of the Earth et al. Green Watchdog (2003) Oakland CA: Natural Capital (2003). http://www.ecoventure.org/greencapitol/greenDog03.pdf.

DC,[34] and the report of the Wisconsin Green Budget Project.[35] In previous years, similar work has been done in a number of other states, including Michigan, Minnesota, and North Carolina.[36] Other states are currently working on similar projects, often in collaboration with Friends of the Earth, which has done a series of similar reports on the national level.

Conclusion. Environmental charges have a substantial potential to play a role in reducing current state budget shortfalls while improving the environment. They are a unique source of revenue because these charges are desirable on policy grounds independent of the revenue they raise.

Raising a large amount of revenue through environmental charges requires related policies to address regressivity and competitiveness concerns. Provided these issues are addressed, using environmental charges to reduce state budget deficits offers an opportunity for novel political coalitions between environmentalists and parents, teachers, labor unions, health care professionals, social advocates and others. At the same time they can reduce the efficiency losses associated with providing the revenue for essential government services.

[34] Friends of the Earth et al. Green Scissors 2003: Washington DC, Washington DC: Friends of the Earth (2003). http://www.foe.org/res/pubs/pdf/DCEN.pdf.

[35] Kerry Schumann & John Keckhaver, Protecting the Environment while Balancing the Budget, Wisconsin Green Budget Project (2003). http://wispirg.org/reports/Green_Budget_1_03.pdf.

[36] http://www.serconline.org/greenscissors.html.