WELFARE FOR WASTE

How Federal Taxpayer Subsidies Waste Resources and Discourage Recycling

GRASSROOTS RECYCLING NETWORK
FRIENDS OF THE EARTH
TAXPAYERS FOR COMMON SENSE
MATERIALS EFFICIENCY PROJECT

ENDORSING ORGANIZATIONS ON BACK

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The GrassRoots Recycling Network is a North American network of recycling and community-based activists who advocate policies and practices to achieve zero waste, to end corporate welfare for waste, and to create sustainable jobs from discards. GRRN was founded in 1995 by members of the Sierra Club, the Institute for Local Self-Reliance, and the California Resource Conservation Association.

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Founded in 1969, Friends of the Earth is dedicated to protecting the planet from environmental degradation; preserving biological, cultural and ethnic diversity; and empowering citizens to have an influential voice in decisions affecting the quality of their environment — and their lives.

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EXECUTIVE SUMMARY

Americans love recycling. It is one of the few ways that citizens believe their individual everyday actions help protect the environment. More than 120 million Americans now recycle more than one quarter of the total U.S. municipal discards.

But, at the same time that citizens take pride in their community recycling programs, the federal government is wasting billions of dollars every year on programs that directly undermine those efforts. This report shows that recycling competes with virgin materials and waste disposal industries on an uneven playing field. Well-financed and politically influential virgin materials industries receive significant tax breaks and other subsidies. This wastes taxpayer money while encouraging environmental depletion, pollution, lost job opportunities, and trashing of recyclable resources. Meanwhile, resource-efficient recycling and reuse businesses, which tend to be smaller, community-based and run by entrepreneurs, struggle against subsidized competitors.

JIM MACKOVJAKI

Favoritism to virgin materials industries originated in the 1800s with federal and state subsidies intended to develop the West, and to spur the transition of the nation from an agrarian to an industrialized society. Many of these subsidies still exist and more have been added. However, the society that these subsidies were intended to develop no longer exists, transformed in part *because* of the early influence of such policies.

Subsidies for resource extraction have their twin in subsidies for waste disposal facilities. Both are integral parts of a linear production model which involves extracting raw materials, making them into products, then discarding them "out of sight, out of mind" in landfills and incinerators. The waste disposal industry, in fact, competes directly with reuse and recycling businesses for the supply of discarded resources. Moreover, burying, burning or otherwise destroying discarded material simply fuels more resource extraction to make more products.

The 15 subsidies targeted in this report will pour an average of $2.6 billion every year into direct subsidies for resource extractive and waste disposal industries, or more than $13 billion over five years.[1] This is real money to real people who pay taxes. Moreover, while the dollar level may seem relatively small, that kind of preferential economic treatment is immensely significant when compared to its potential impact on the much smaller recycling and reuse industries. For example, in the late 1990s, the value of all postconsumer recyclable materials furnished to recycling manufacturers, including non-ferrous metals, has ranged from $16-19 billion per year.[2] Subsidies to the raw materials industries that are worth 15% of the recycling industry's feedstock costs are clearly influential.

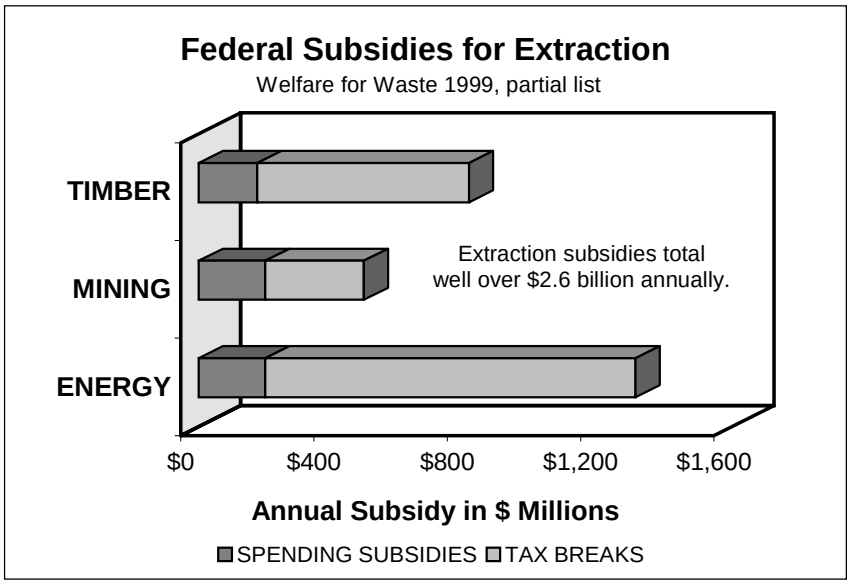
Moreover, the direct subsidies detailed in this report represent just the tip of the iceberg. Billions of dollars more in preferences for resource-wasting industries tip the scales farther against recycling and reuse. These include indirect subsidies, such as:

- cheap energy that disproportionately benefits the more energy-intensive extractive industries,
- road building at taxpayer expense to serve industries remote from metropolitan markets, and
- tax policies that favor capital expenditures over labor costs.

Even more substantial are the costs that virgin materials and waste disposal industries *don't* pay but should. Too often, taxpayers end up paying these costs, such as:

- impacts of environmental damage,
- pollution clean-up, and
- waste disposal.

By paying for subsidies to extract virgin resources, taxpayers end up:



TEDD WARD

- losing money on undervalued, taypayer-owned resources,
- providing welfare for private corporations,
- cleaning up pollution, eroded land, silted rivers, damaged ecosystems, and->azardous waste sites in an even larger number than might >ave been created if subsidies >ad not encouraged more extraction,
- paying for disposal of companies' products when they're discarded,
- encouraging substitution of capital-intensive processes t>at extract materials instead of more labor-intensive industries that conserve them, and
- paying more for recycling that could->ave been competitive with or even less expensive than fairly priced virgin materials production.

If, instead, materials and products reflected their full costs, in part by removing subsidies that disguise them, it would help recycling and-reuse industries and-spur more efficient product design and-manufacturing. These changes would make a major contribution to resolving many of today's critical environmental and resource issues.

This report does not claim that eliminating federal virgin materials subsidies will, alone, revolutionize the economics of recycling and-reuse. After all, more than a century of subsidies and federal favoritism >as showered

FEDERAL TAXPAYER SUBSIDIES THAT UNDERMINE RECYCLING AND REUSE

	Average over 1 year ($ Millions)	Total over 5 years ($ Millions)	Tax or Spending Subsidy[a]
DIRECT SUBSIDIES			
Timber			
1. Capital Gains Status For Timber Sales	$ 635	$ 3,175	tax
2. Below-Cost Forest Service Sales	111	555	spending
3. Forest Roads Construction	31	157	spending
4. Forest Service Salvage Fund	34	171	spending
Timber Subsidies Subtotal	$ 811	$ 4,058	
Hard Rock Mining			
5. 1872 Mining Law	$ 200	$ 1,000	resource
6. Mining Percentage Depletion Allowance	269	1,345	tax
7. Expensing Exploration And Development Costs	27	135	tax
8. Inadequate Bond Requirements	NA	NA	tax
Mining Subsidies Subtotal	$ 496	$ 2,480	
Energy			
9. Percentage Depletion Allowance	$ 276	$ 1,380	tax
10. Intangible Drilling Costs (IDCs)	9	45	tax
11. Passive Loss Tax Shelter	38	190	tax
12. Alternative Fuel Production Credit	543	2,715	tax
13. Enhanced Oil Recovery	245	1,225	tax
14. BPA: Electric Power Subsidies For Aluminum	200	1,000	spending
Energy Subsidies Subtotal	$ 1,311	$ 6,555	
Waste Facilities			
15. Private Activity Bonds	NA	NA	tax
TOTAL DIRECT SUBSIDIES	$ 2,618	$13,093	
INDIRECT SUBSIDIES			
Energy (e.g. unnaturally low prices, cheap feedstocks)	Substantial	Substantial	
Water (e.g. replacement for higher-priced energy)	Substantial	Substantial	
Transportation (e.g. remote highways, inland waterways)	Substantial	Substantial	
Tax (e.g. bias towards capital investments)	Substantial	Substantial	
International (e.g. Multilateral promotion of extractive industries, trade and aid favoritism,transfer pricing)	Substantial	Substantial	
Unfunded External Costs (e.g. avoidance of pollution clean-ups, environmental damage, failure to incorporate cost of disposal)	Substantial	Substantial	

[a] Tax subsidies are taken from line items in Table 5-1. "Total Revenue Loss Estimates For Tax Expenditures In The Income Tax," in the *Budget of the United States Government, Fiscal Year 2000, Analytical Perspectives* (Washington, DC: Office of Management and Budget, 1999). Calculations of spending subsidies (which in this report include related subsidies for resource giveaways) were carefully developed, in consultation with experts from diverse perspectives, from amounts allocated in appropriations bills. Some of the spending subsidies were first published in *Green Scissors,* Friends of the Earth (Washington, DC: Friends of the Earth, 1999).

virgin materials industries with economic and political benefits. The result is substantial advantages for extractive and disposal industries in terms of wealth, pricing, distribution, stability, ability to attract investments, and political clout to continue the subsidies. But eliminating the subsidies will at least give recycling and reuse industries a more even playing field on which to compete while also saving taxpayer money.

Current demand for energy and virgin resources, many of which are non-renewable, cannot continue without fostering ever-greater environmental and economic degradation. Lawmakers and producers must, instead, recognize the necessity of a new policy for the new century — a policy based on the environmentally and economically sustainable use of materials, or "materials efficiency." Recycling and reuse, which usually use materials, energy and water more efficiently than virgin materials industries and produce less pollution, are essential elements of such a materials efficient policy.

ECO-CYCLE

On the brink of the new millennium, the United States can no longer afford to apply 19th century policies to a world unimaginable when they were devised. Holding to archaic policies cripples innovations necessary for continued economic health and environmental sustainability. Eliminating the subsidies outlined in *Welfare for Waste* is an essential start in leveling the playing field to allow the industries best suited for the future to develop today.

A FOUR-STAGE PROCESS FOR ELIMINATING SUBSIDIES FOR VIRGIN MATERIALS AND WASTING RESOURCES

1) Congress should cut the direct federal subsidies listed in this report.

2) Federal, state and local agencies should investigate state and local subsidies and recommend reforms to save taxpayer money while promoting materials efficiency.

3) Congress and the executive branch should examine the indirect federal subsidies listed in this report, such as those for energy and transportation, and others that negatively affect materials efficiency, and identify opportunities for future cuts.

4) Government should sponsor a public review to determine policies to develop a materials-efficient economy that requires less taxpayer subsidies.

PART 1

INTRODUCTION

Welfare for Waste describes the impact on the recycling industry of wasteful federal subsidies. Unnecessary government handouts to wealthy, well-established, resource-intensive industries undermine recycling, distort materials markets, contribute to environmental damage, thwart the efficient use of materials, lose billions of taxpayer dollars, and prop up a resource extraction system designed in the 19th century that cannot appropriately respond to today's needs. Eliminating this federal waste will save more than $13 billion over 5 years, increase resource conservation through recycling and reuse, and create sustainable jobs.

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The authors and endorsers of *Welfare for Waste* are a unique coalition of recycling advocates, businesses, environmental groups and taxpayers dedicated to eliminating needless government subsidies. While each organization has different perspectives and goals, they agree on the report's recommended subsidy cuts for these reasons:

- Recyclers — many of them small businesses — want to level the playing field and allow fair competition with virgin materials and waste industries.

- Environmentalists want to reduce toxic air and water pollution, slow climate change, preserve natural habitats, and curb waste of precious natural resources like timber, oil and metals.

- Taxpayer advocates want to save billions of taxpayer dollars, spend tax money wisely, and reduce the size and cost of the federal government.

The direct subsidies in this report are divided into federal tax subsidies and federal spending subsidies. Tax saving figures were calculated by the Office of Management and Budget.[3] Saving estimates generated from federal spending subsidies (which also include giveaways of taxpayer-owned resources at bargain prices) were carefully developed through consultation with a variety of experts and advocates from diverse perspectives. They are conservative estimates using the most current materials. Subsidy estimates are expressed both as average costs per year and as payments projected over five years, which is a standard method of federal budget analysis.

"Subsidy" in this report is used to mean all federal financial benefits, incentives and policies that give one industry a competitive advantage. By targeting "direct subsidies," ***Welfare for Waste*** highlights only some of the more obvious federal handouts that undermine recycling. It demonstrates how federal policies favor virgin resource extraction and waste disposal over more resource-efficient and environmentally sound recycling and reuse. By no means, however, does this report's listing represent all subsidies that benefit virgin material extraction and waste industries at the ex-

ECO-CYCLE

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pense of taxpayers and recyclers. There are also numerous additional "indirect subsidies" -- taxpayer-funded benefits favoring virgin materials industries -- such as:

- unfunded closure liabilities at oil and gas wells,
- federally-funded energy research and development,
- tax-advantaged bonds for municipal landfills and incinerators disposing of products and packaging as waste and thereby encouraging more virgin resource extraction.
- development of transportation systems that make long-distance shipping cheap, to the detriment of locally-based recycling industries, and
- taxpayer-funded pollution clean-up.

The Mineral Policy Center estimates that taxpayers are already burdened by between $32 and $72 billion in cleanup costs for more than a half million abandoned mine sites alone.[4] Some of the largest benefits to virgin materials industries — externalized environmental costs and indirect energy costs — are difficult to quantify. Some of these preferential benefits are briefly described at the end of this report in the discussion of indirect subsidies and may be explored in more detail in future versions of this report.

VIRGIN MATERIALS SUBSIDIES: WASTED RESOURCES

Americans vote by their actions as well as at the ballot box. More people recycle than vote. With their help, the U.S. has increased its official recycling rate to 27% of total municipal discards, twice the rate of a decade ago.[5] Hundreds of thousands of people work the recycling and reuse industry, which generates tens of billions of dollars in economic activity each year.

But, while Americans enthusiastically support recycling at the local level, few realize that their federal tax dollars directly undermine it. These handouts occur through a combination of existing federal spending programs, tax breaks and resource subsidies — what this report calls *Welfare for Waste*. Billions more in indirect subsidies — for transportation, energy production, cleanup of hazardous waste sites, financing, insurance and other activities — help give virgin materials producers and waste disposal firms an economic advantage not available to recyclers. The result is:

Environmental Damage and Wasted Natural Resources

- The United States meets most of its raw materials needs through logging, mining, and oil extraction instead of conserving natural resources through recycling.
- It continues to bury or burn most of what it calls "waste," when the *real* waste is the resources that should have been recycled instead of landfilled or burned — resources that could have prevented more raw materials from being mined, cut, extracted or squandered.
- More toxic substances are released to air, water, and land because virgin materials production results, on average, in greater pollution than recycling and reuse.
- More energy is used and more greenhouse gases are emitted because virgin materials production is much more energy-intensive than recycling.

Taxpayers Pay for Things They Should Not

- American tax money is used to directly reduce production costs for virgin materials firms while recycling companies get far less comparable support.
- Tax money also supports unnaturally low virgin materials prices indirectly through using government funds to cover costs such as paying for health and environmental damages created by resource extraction processes or cleaning up expensive, abandoned hazardous-waste sites.

Recycling and Reuse Businesses Are Put at a Disadvantage

- Artificially low virgin materials prices discourage materials-efficient design, recycling, reuse, and other resource-conserving systems and practices.
- Most recycling commodity prices are pegged to be below the level for comparable virgin raw materials. Low virgin materials prices drive down prices for recyclable materials as well, making it more difficult for recyclers to cover costs and stay in business.
- Promising opportunities in materials-efficient and environmentally sound production methods languish because market incentives continue to direct investment capital to resource-intensive industries instead.

Job Opportunities Are Lost

- Jobs are lost as a result of policies favoring extractive and waste disposal industries, because recycling and reuse businesses employ many more people per

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ton of material processed or managed.

- Abundant resources and generous subsidies encourage companies to extract raw materials in the United States, then ship them to other countries for manufacturing into finished products. Jobs that could have been created in domestic recycling and reuse businesses are instead shipped overseas along with the raw materials.

These turn-of-the-century subsidy policies worked — perhaps too well. ... Unfortunately, the laws that underwrote this rampant resource extraction were far more resilient than the land, with some of those statutes still with us, unchanged.

Virgin Materials Subsidies Were Established By Now-Outdated Public Policies

People in the United States of a hundred years ago would find today's nation totally unrecognizable, even though theirs was the seed from which our current complex technological society grew. In the late 1800s, European-Americans considered much of the continent to be unexplored wilderness. The population was small and resources were perceived as rich and endless. There was little consideration for environmental impacts, and the air, rivers and land were expected to constantly regenerate, to absorb and heal any damages. American companies were building manufacturing plants, creating jobs and markets within our borders. Recycling was an integral part of everyday life, but the time's burgeoning businesses were bursting to expand, creating an insatiable appetite for more materials.

The federal and state governments responded by enacting laws to spur industrial development. These laws encouraged resource extraction through land grants, cheap sales of timber and mineral-bearing lands, below-cost government assistance, advantageous freight rates, and many other kinds of subsidies. Federal programs were designed to speed the conversion of natural resources such as minerals, timber, and agricultural land into marketable commodities. They were justified on the theory that converting America's natural wealth into dollars would create a nest egg of capital for the national economy and support development of the largely uninhabited West.

These turn-of-the-century subsidy policies worked — perhaps too well. Much of the natural resources of the American West were liquidated within a generation or two, and the frontier became history. Unfortunately, the laws that underwrote this rampant resource extraction were far more resilient than the land, with some of those statutes still with us, unchanged. The most obvious example is the 1872 General Mining Act, which requires the federal government to give away valuable public mining lands at nineteenth-century prices that even then were very low.

Most other federal natural resource laws are equally archaic, even when more recently enacted. The U.S. continues to make its publicly-owned resources such as trees, mineral rights, and grazing land available for insufficient prices. For example, the U.S. government lost $204 million in taxpayer money selling trees from U.S. national forests in 1996.[6] While taxpayers lose money, timber companies get trees for prices well below what they would have paid to states or to private landowners.

In addition to their undervalued access to public resources, companies involved in logging, mining, and oil extraction get special tax breaks, including percentage depletion allowances, expensing of exploration and development costs for minerals, and special expensing and capital-gains provisions for timber. These tax loopholes lower extractive industries' costs relative to other industries such as recycling.

These natural resource tax incentives and appropriations are particularly outdated in today's global manufacturing economy, where companies subsidized by U.S. tax money ship raw materials to other countries for production of finished products.

Value-added goods are then imported back into the U.S. at higher prices, adding to trade deficits.

Compounding the impact of federal programs, state policies also subsidize virgin materials and waste industries. California alone spends over $180 million annually in timber, mining, and oil and gas subsidies.[7] While a state study concluded that current California subsidies may not significantly affect the local recycling market, it recognized that the combined effect of federal, state, and local subsidies over time has been significant, stating, "One result [of subsidies] is that virgin materials industries throughout the United States have developed infrastructures that allow economies of scale and other benefits not generally enjoyed by producers of secondary materials."[8]

In fact, after more than a century of explicit subsidies and other federal favoritism, virgin materials industries have gained economic and political advantages unmatched by firms in recycling and reuse. Virgin materials companies are likely to be thoroughly vertically integrated, owning or controlling production systems all the way from resource extraction to manufacturing to converting to customer distribution. Their huge economies of scale dwarf most recycling businesses, increasing price differentials, and they have many avenues available for financing. In addition, their economic muscle, combined with ample and regular political contributions, helps virgin materials industries and their trade associations maintain their industries' lowered cost of doing business through access to elected officials with the power to continue the subsidies.

Government Virgin Materials Subsidies Discourage Recycling

Many of the subsidies highlighted in this report are hidden in arcane federal programs which are difficult to understand even for budget and tax experts. Nevertheless, they affect Americans and the U.S. materials economy every day, encouraging continued investments in inefficient production systems, discouraging recycling, and distorting prices and incentives for a wide array of materials. Some examples:

Aluminum Despite the fact that virgin aluminum takes so much power to produce that it has been called "frozen electricity," only about one third of aluminum products discarded in U.S. municipal solid waste are recycled.[9] Recycling aluminum saves 95% of the energy otherwise used to make virgin aluminum.[10] But U.S. industries have relatively little concern about the cost of electricity for producing aluminum because for decades federal dams have provided cheap electric power to smelters that produce aluminum from virgin materials. Those subsidies continue to encourage this waste of energy and resources. Aluminum smelters get over $200 million each year in subsidies for cut-rate power from federal dams.[11] What that means is that for every ton of aluminum[12] recycled, taxpayers spend more than $200 in subsidies to counteract that recycling. More aluminum would be recycled if aluminum smelters paid market rates for their electricity.

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Paper and Wood Products Only slightly more than 40 percent of the paper discarded in the U.S. is recycled,[13] a significantly lower rate than in European and Asian countries. Among the many factors affecting paper recycling are federal subsidies for cutting trees, making wood less expensive than it would be otherwise. Timber companies get subsidies to cut trees in national forests and also receive special tax breaks for timber cutting on private lands, even while private landowners have difficulty making ends meet because they must compete with undervalued timber costs on federal lands. In addition, landfilling and burning paper are encouraged over recycling because 70% of landfills and incinerators are financed with "private activity bonds"

that earn tax-exempt income even though they primarily benefit private corporations or individuals. Meanwhile, recycled paper makes up only 6-7% of the printing and writing paper market, primarily because its sometimes higher finished paper cost limits customer acceptance.[14] Prices for recycled printing and writing paper would be more competitive and more paper would be recycled if these subsidies were removed.

Timber subsidies discourage wood reuse as well. Deconstructing buildings currently is only cost-effective for antique and highest-value woods (rare because of decades of unsustainable timber policies). Artificially low prices for timber encourage cutting more trees for building, framing, furniture, pallets, stakes, crates, and a myriad of other uses that could be more efficiently met through recycling wood and other materials.

Plastics Plastics recycling rates are dismal: Even the 5% overall rate of plastics recycling reported by EPA in 1996[15] is regarded as unrealistically high by most recycling professionals with experience in the recycled plastics markets. One of many reasons is that taxpayers provide numerous tax breaks for oil and energy. Oil and gas are important feedstocks for plastics, and plastics production requires large amounts of energy, eight times more to make virgin plastic than recycled plastic, for some types.[16] More plastics would be recycled if taxpayers did not subsidize oil and energy prices.

IMAGINE IT!

Steel Recycling rates for steel are fairly high, but could be even higher if taxpayers did not subsidize energy as well as the coking coal that is a feedstock in making virgin steel. Recycling provides less than a third of U.S. steel consumption.[17] The higher the price of virgin steel, the more it is worth devising new technologies and options that reduce impurities and produce higher-quality steel from recovered metal — and the more efficiently steel will be used.

Other metals Recycling rates for other metals vary. Precious metals like gold, silver, and platinum are recycled at very high rates, while relatively small proportions of others, such as zinc, are recovered. Even recycling rates for precious metals would increase if subsidies were cut and virgin metal prices increased. It would then be economic to recover quantities now considered inconsequential, such as metals contained in circuit boards and other low-volume uses. In contrast, mining companies can acquire taxpayer-owned land containing deposits of such metals virtually for free through the 1872 Mining Act, which also allows companies to extract minerals without paying any significant royalty to taxpayers.[18]

The Effects Are Cumulative

U.S. lawmakers never set out explicitly to discourage recycling. They did, however, intend to encourage the development of extractive industries at a time when it seemed economically logical to do so. Those policies now, however, have the unintended effect of impeding today's national policy goals: recycling, conservation of natural resources, job development and reduction of the national debt.

Since it is unclear exactly how much federal subsidies to extractive industries affect the relative prices of virgin and recycled materials and products, this report does not

claim that eliminating federal virgin materials subsidies will, alone, revolutionize the economics of recycling and reuse. But even though a study of disincentives to recycling by the U.S. Environmental Protection Agency (EPA)[19] was unable to determine specific impacts, the report did state, "Subsidies to virgin industries (which undoubtedly raise their profit margins) render these industries more attractive to new entrants over the long run. Entry into the virgin industries becomes more likely and exit less likely in comparison to the unsubsidized world — with the total effect being an 'over-production' of virgin material compared to quantities that would result from an undistorted market."

Although EPA's report was released in 1994, it was actually authored in the late 1980s, when many recycling businesses were in their infancy and many recycled products had not yet been developed. The market distortions created by federal subsidies can only be assumed to have since increased. But even in the 1980s the report acknowledged, "The overwhelming bias of federal tax policies and program outlays favors extractive industries and their beneficiaries over recycled markets."

That favoritism is only the tip of a very large iceberg. When combined with all kinds of federal and state policies favoring virgin materials industries both directly and indirectly, these subsidies put recycling and other materials-efficient practices at a major economic disadvantage in many ways:

- **Small changes add up.**
  Small movements in finished virgin commodity prices can translate into significant percentage increases in the cost of scrap materials such as old newspapers. Since prices for many used materials tend to be pegged at a fixed amount below those of virgin commodities, low prices for virgin materials can result in below-zero prices for recyclable materials, with devastating effects on secondary materials processing firms. Low prices for recyclable materials also discourage investments needed to build more stability.

- **Subsidies may not translate directly into price differences.**
  Instead, they may increase profit margins for the favored industries, making investment and financing more attractive. The federal Office of Management and Budget acknowledges, "The ultimate beneficiaries of tax expenditures could be stockholders, employees, customers, or others, depending on economic forces."[20]

- **Subsidies distort the economy and divert investment.**
  Subsidies for extractive industries distort our economy, making it profitable to invest in companies and processes that may not be attractive otherwise. According to the Progressive Policy Institute, government subsidies that prop up inefficient industries can slow development of those that are more economically efficient. The conservative Center for the Study of American Business points out that, "When government attempts to improve on market forces with tax subsidies, the result is to accelerate the use of natural resources while depressing federal revenues and increasing the budget deficit," and, instead, calls for rewriting government regulations that discourage recycling.[21]

- **Subsidies for inefficient resource use are an impediment to building a sustainable economy**.
  By perpetuating current wasteful uses and technologies, subsidies for resource extraction and waste facilities discourage processes and technologies that conserve resources and the environment. The Organization for Economic Cooperation and Development (OECD), the economic association of all the major

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industrial nations, has recommended removing such subsidies as a crucial step toward an economy more in tune with an environmentally sustainable future.[22] The OECD has also recently recommended that industrial nations work toward sharp increases in materials efficiency.[23]

- **Subsidies encourage virgin materials industries to continue investment in production capacity even when markets are glutted.**
  For example, virgin plastic resin production capacity has, in recent years, significantly exceeded demand, depressing prices for both virgin and recycled resin. Cheap oil, both as a feedstock and an energy source, has undoubtedly played a role in the continuing economic advantage of virgin resin facilities and their attractiveness to investors.

- **U.S. subsidies benefit foreign competitors as production becomes global.**
  U.S. public lands supply raw materials for manufacturing in foreign countries, thus harming the U.S. economy in multiple ways, including loss of resources and damages from pollution, competition with U.S. jobs, and balance of trade deficits created by exporting below-cost raw materials while importing significantly more expensive value-added finished products made in other countries from those materials.

THE 21ST CENTURY REQUIRES A NEW PUBLIC POLICY: MATERIALS EFFICIENCY

As the U.S. approaches the Millennium and the 21st century, it is increasingly clear that the demand on virgin resources, many of which are non-renewable, cannot continue at the pace current production demands. Nor can the overproduction from raw materials that underwrites the materialistic standard of living attained in the U.S. and industrialized nations be expanded around the globe; there are not enough resources to sustain it in its current form. Continuing to subsidize virgin materials depletion is therefore irresponsible and destructive.

However, the goal of a comfortable standard of living in the U.S. and other industrial nations, as well as expanding that standard to the rest of the world, is feasible if lawmakers and producers recognize the necessity of a new policy for the new century — a policy based on eliminating wasteful taxpayer subsidies while promoting the environmentally and economically sustainable use of materials, or "materials efficiency." Such a policy saves taxpayers money while rewarding the materials production methods that add up to the most positive impact on the environment, economy and society, after taking into account all costs and benefits, including many that are not now calculated in economic evaluations. In some cases, even production may not be the best choice. Instead, reuse, redesign or not producing the product at all may be recognized as the most efficient use of materials.

Benefits of Increased Materials Efficiency

If the economic playing field is leveled to allow recycling to compete effectively against virgin materials, the nation will reap a variety of benefits. Most directly, taxpayers will save the cost of the subsidies outlined in this report. But those savings are just the beginning. Other benefits include:

- **Less Garbage,** Less Pollution
  With more used materials recognized as secondary resources rather than trash, less will go to landfills and incinerators, extending their lives and saving taxpayer money for disposal of municipal discards. Governments will save on air-pollution-related health care costs and on hazardous-waste cleanup.

- **More Jobs**
  While extractive industries are aggressively promoted by some politicians and touted for the jobs they create, economic studies reveal that recycling, reuse, and other materials-efficient practices generally create more, and more sustainable, employment. The Institute for Local Self-Reliance estimates that a typical city of one million people can create about 2,000 jobs through recycling and waste reduction, and save its government, businesses, and households $7 million per year.[24] A study of recycling businesses in North Carolina found that recycling was supporting over 8,800 private and public sector jobs — about the same number of jobs as the state's biotechnology industry.[25]

  The North Carolina report also found that recycling is a net job creator for the state. For every 100 jobs created by recycling, only 13 jobs are lost in solid waste collection and disposal and in virgin materials extraction. Similar jobs ratios are likely for a majority of U.S. states. Recycling is likely to come out on top even in many states where extractive industries are economically powerful. For example, a recent study of the Pacific Northwest[26] (including the three northwestern U.S. states and

If the economic playing field is leveled to allow recycling to compete effectively against virgin materials, the nation will reap a variety of benefits.

British Columbia) showed that mining and logging only accounted for 4% of total employment in 1993, down from 8.4% in 1969. The absolute number of jobs in the two industries fell by 12.5% over the same period. Fewer people in this region, famous for its resource industries, work in timber and mining than in government, services, or trade. Similarly, according to the 1997 Economic Report of the President, extractive industries in the West "now make up only a small and declining fraction of economic activity" and provide far less income and employment in the aggregate than do recreation, tourism, manufacturing, and finance.[27]

In the long run, recycling jobs are also likely to be more stable than timber or mining jobs, which dry up when the trees or ore are gone. Since recycling creates ongoing resource cycles in local or regional areas, it tends to create permanent jobs within those areas, while extractive-industry jobs may shift to other countries that possess more unexploited virgin resources. Unlike mining and logging, recycling does not leave behind large swaths of denuded or polluted land, which can often deter tourists or new residents.

The North Carolina report also found that recycling is a net job creator for the state. For every 100 jobs created by recycling, only 13 jobs are lost in solid waste collection and disposal and in virgin materials extraction.

- **Environmental Protection and Conservation**

Virgin-materials industries account for a disproportionate share of global pollution, are major threats to many of the world's remaining reserves of biological and cultural diversity, and are among the largest users of energy. By reducing demand for virgin materials, recycling and other materials-efficiency measures help reduce such problems. Several studies in recent years have detailed the systemic environmental benefits of recycling, including substantial reductions in air and water pollution.

A recent survey of such studies concluded that, by recycling municipal discarded materials at 27 percent, the U.S. is already reducing its emissions of sulfur dioxide by 1.5 percent, nitrogen oxides by 1.3 percent, and carbon monoxide by 0.83 percent.[28] The same study found that recycling is now reducing greenhouse gas emissions of methane by 9 percent and carbon dioxide by 1.5 percent. A 1997 draft paper by the U.S. Environmental Protection Agency also concluded that recycling discarded materials — or avoiding their production altogether — reduces greenhouse gas emissions by much more than either incineration or landfilling.[29] The methane is saved mostly because recycling reduces landfilling. Landfills emit substantial amounts of methane as the garbage in them decomposes. The carbon dioxide reductions come from avoiding the burning of fossil fuels to produce the additional energy needed to make virgin materials.

Recycling also reduces energy use and increases energy efficiency. In general, it takes much more energy to produce virgin materials than recycled. On average, it takes 20 times the energy to make virgin aluminum, eight times the energy to make virgin plastic, and two times the energy to make virgin paper than to produce their recycled equivalents. Recycling is already saving the U.S. more than 1% of its annual use of commercial energy.[30]

- **Reduced hazardous waste**

Billions of tons of waste, which consumers never see, are produced in extracting and processing virgin materials. For example, 99 tons of mining and smelting waste — much of it toxic — are produced for every ton of copper taken from the earth. In comparison, producing a ton of recycled copper from used materials creates virtually no waste. Ironically, the mining industry gets a

special exemption from the Resource Conservation and Recovery Act, the nation's primary law governing waste management, by exempting a large share of wastes from regulation as hazardous, no matter what their toxicity.

- **Economic Savings**
  Taxpayers end up paying the price for air and water pollution, silted rivers, and accelerated runoff of rainfall and snowmelt. Future generations will pay to clean up today's mine sites, landfills, and plastics factories that turn into tomorrow's Superfund sites, when their clean-up costs should have been incorporated into the costs of extraction and the materials produced. The Mineral Policy Center estimates that cleanup costs for more than a half million abandoned mine sites already will cost taxpayers between $32 and $72 billion.[31] Even so, the direct costs of such cleanups may never approach the true economic value of the natural systems that are disrupted or destroyed. Healthy ecosystems provide a wide variety of natural services, including flood control, clean and consistent drinking water supplies, and climate regulation, that are extremely expensive to replace — when they can be — with human-engineered solutions.

Added up, the benefits of materials-efficient practices like recycling and reuse make it clear that there is a coherent, workable alternative to subsidizing endless growth in materials consumption and waste. A century ago, nations began to measure their wealth and strength by their output and consumption of steel or other virgin commodities. Today, some countries, particularly in Europe, are beginning to consider high levels of materials consumption and waste as a drag on their economies, rather than a boost, and are turning to materials recovery on a large scale.

Resource efficiency is becoming a watchword for the industrial leaders of the 21st century, who are now plotting out manufacturing systems that reuse the huge quantities of materials that drop out of America's economic system each year because they are considered "waste." Those recyclable resources have the potential to supply a much larger share of Americans' needs, if the U.S. can muster the political will to reorient its materials policies. A good beginning is to eliminate the subsidies listed in this report.

On average, it takes 20 times the energy to make virgin aluminum, eight times the energy to make virgin plastic, and two times the energy to make virgin paper than to produce their recycled equivalents.

THE SOLUTION: A FOUR-STAGE PROCESS FOR ELIMINATING SUBSIDIES FOR VIRGIN MATERIALS AND WASTING RESOURCES

Subsidies to the raw materials industries that are worth 15% of the recycling industry's feedstock costs clearly can tip the scales powerfully against recycling and reuse.

The $2.6 billion a year ($13 billion over five years) in subsidies detailed in this report may not seem like a lot to those familiar with the enormous scale of the federal budget, or the virgin materials economy as a whole. But it is still real money to hardworking taxpayers. Moreover, it is instructive to compare it with the hotly-debated sums of money requested for municipal disposal and recycling programs. For example, $2.6 billion could have a major impact on increasing the recovery and use of recyclable materials. Instead, with the subsidies in place now, for every ton of municipal discards recycled in 1996, $45 is spent on encouraging extractive industries instead.[32]

While the dollar level of these subsidies may seem miniscule in the virgin raw materials and waste disposal industries, it is immensely significant when compared to its potential impact on the much smaller recycling and reuse industries. In the late 1990s, the value of all postconsumer recyclable materials furnished to recycling manufacturers, including non-ferrous metals, has ranged from $16-19 billion per year.[33] Subsidies to the raw materials industries that are worth 15% of the recycling industry's feedstock costs clearly can tip the scales powerfully against recycling and reuse.

An important first step towards a sustainable materials-efficient economy is for taxpayers to stop paying to waste. To do so, this report recommends a four-stage process:

1) Congress should cut the direct federal subsidies listed in this report.

2) Federal, state and local agencies should investigate state and local subsidies and recommend reforms to save taxpayer money while promoting materials efficiency.

3) Congress and the executive branch should examine the indirect federal subsidies listed in this report, such as those for energy and transportation, and others that negatively affect materials efficiency, and identify opportunities for future cuts.

4) Government should sponsor a public review to determine policies that will be most effective in developing a materials-efficient economy in the 21st century that requires less taxpayer subsidies.

PART 2

SELECTED DIRECT FEDERAL TAX AND SPENDING SUBSIDIES THAT UNDERMINE RECYCLING, REUSE, AND RESOURCE CONSERVATION

TIMBER SUBSIDIES

Subsidy	Average over 1 year ($ Millions)	Total over 5 years ($ Millions)
1. Timber Tax Breaks	635	3,175
2. Below-Cost Timber Sales	111	555
3. Forest Roads Construction	31	157
4. Forest Service Salvage Fund	34	171
Total	811	4,058

Until the Second World War, private timberlands produced the majority of the nation's timber, while the national forests were largely preserved by the federal government as a public trust. But the postwar industrial boom increased demand for a variety of timber products, which led to the rapid expansion of commercial logging of the National Forests.

Today, Congress provides large subsidies for the commercial timber sales program run by the Forest Service. Unlike private timber companies, the Forest Service does not factor such expenses as sales preparation, inventory, and road maintenance into the prices it charges for trees. This allows the agency to sell timber below its true costs. Artificially low prices for timber from federal lands also reduce the sale price a private timber landowner can expect, despite the fact that private landowners *do* need to recover their sales costs as well as costs for reforestation and environmental mitigation. Driving down the prices paid for trees even outside the Forest Service expands the effect of lower materials prices for virgin paper and wood production industries on recycled paper and deconstructed wood processes.

In addition, the Forest Service has used tax dollars to build an extensive network of roads that should normally be expected to be paid for by the buyers of publicly-owned trees. Even when the road construction and reconstruction is done by timber purchasers, the Forest Service generally compensates them for the work. In 1991, Forbes magazine called the Forest Service "the world's largest socialized road building company."[34] Once built, the roads require expensive maintenance and create major erosion problems. Even the Forest Service admits that nearly 40% of its nearly 440,000 miles of roads are below safety standards and require extensive repairs.

Special tax breaks for timber investments subsidize the production of virgin wood at the expense of reuse and recycling. The combination of below-cost timber sales, government financed roads to harvest that timber, and reduced taxes on profits represents a significant government intervention in the market to support a mature indus-

try. Furthermore, the various subsidies act in concert to create market obstacles to competition from recycled pulp and paper producers by diverting investment in capital as well as research and development (R&D) to existing virgin timber companies.

Paper industry representatives typically state that only one-third of trees cut go to pulp and papermaking. Forest advocates, however, believe that the percentage is much higher, with more than 40% of the timber harvested nationwide ending up as pulpwood and nearly 60% of the volume of timber from national forests ending up as either fuel or furnish for pulp mills.[35] Certainly many corporations that have papermaking operations also own major lumber and forest products businesses as well. The economic benefits accruing from using forest and sawmill residue and smaller trees for papermaking are critical to evaluating the worth of a timber stand.

ECO-CYCLE

The combination of timber subsidies reduce the cost of cutting wood for lumber and wood products, rather than encourage reuse and recycling. Deconstruction of existing buildings to reuse lumber, flooring, cabinets and other potentially valuable wood is gaining a foothold in several areas of the U.S. and Canada. But only the most valuable woods, such as old-growth redwood in Northern California and the Pacific Northwest, first-growth Douglas fir, and some well-preserved antique wood, are currently cost-effective to reuse. Today's newly-cut wood is regarded as inferior in quality to wood used for architectural purposes decades ago because trees are not allowed to grow as long before cutting. But trees are still being cut at a prodigious rate for all kinds of building, framing, and furniture, as well as for pallets, stakes, crates, and a myriad of other uses that could be more efficiently met through reusing and recycling wood as well as other materials.

Industrial forestry management practices are often environmentally unsound, treating forests as if they were farms rather than ecosystems. Poor forest management can harm habitat, threaten terrestrial species, increase erosion, and damage streams and aquatic species through sedimentation and contamination. Communities downstream from logging operations often suffer declines in water quality and increases in flooding — problems which then create the need for additional investments in flood control, water purification and storage, and wastewater and stormwater management. Subsidizing the creation of such problems through giveaways of public resources only adds insult to injury.

1. Timber Tax Breaks

$ 635 Million average per year
$ 3.175 Billion over five years[36]

Under normal tax provisions, the sale of timber would be treated as ordinary income and taxed accordingly. But since 1944, private timber owners have been able to claim capital gains status for much of their capital or lasting assets, which include timber sales, and pay taxes at a significantly lower rate.

Under normal tax rules, capital costs are written off over time. However, since early this century, private timber owners have been able to immediately write off capital expenses such as property, equipment, or timber, even though the timber may not be harvested for decades, essentially providing the timber industry with an interest free loan from the government.

In addition, a special annual reforestation tax credit is allowed for clearing land and planting trees for the production of timber, when reforestation should be standard business practice instead.

Impact On Recycling and Reuse

These tax benefits reduce the timber industry's business costs at taxpayer expense, encouraging continued investment in virgin timber operations and in manufacturing facilities that consume virgin wood. The pulp and paper industry is one of the most capital-intensive industries in the world. The American Forest & Paper Association reports that its ratio of plant and equipment expenses to employee expenses is twice the average for all U.S manufacturing. Recycled paper mills have similar facilities and employee expenses, but do not have the advantage of subsidized feedstocks. Paper recycling companies are thus at a disadvantage when attempting to attract the capital, as well as research and development (R&D), investment they need. Artificially low virgin paper prices discourage higher-priced recycled paper purchases, further inhibiting market development for recycled paper production.

In addition, the cost of deconstructing structures to remove reusable lumber is still considered too high for all but the most valuable woods, but would be much more economically feasible if new wood were priced at its true cost. Other wood products such as pallets would also be more likely to be reused if new wood replacements more properly reflected their costs.

"The U.S. Government is the only property owner that I know of that pays private parties to deplete its own resources."
Rep. James Leach, R-Iowa

2. Below-Cost Commodity Timber Sale Program

$ 111 Million average per year
$ 555 Million over five years[37]

The U.S. Forest Service "commodity" timber sale program sells trees to companies at pricing that routinely fails to recover the costs of preparing sales and administering harvests. The result is that timber is commonly sold below sustainable market value. Although timber companies claim they pay market rates because the trees are sold at auction, many tracts have only one or two bidders. Over the past decade, the U.S. Forest Service has lost billions of dollars on its timber program. The Forest Service itself announced that, even by its own controversial accounting standards, the below-cost timber sales program lost $88.6 million in FY97. According to the Wilderness Society's analysis of the FY97 sales, below-cost timber sales caused 83 of 106 National Forests with commodity sales to lose $111 million.[39]

"In terms of assets, the agency would rank in the top five in Fortune Magazine's list of the nation's 500 largest corporations. In terms of operating revenues, however, the agency would be only number 290. In terms of net income, the Forest Service would be classified as bankrupt."[38]
Economist Randal O'Toole

The commodity timber sale program is only one part of the timber sale program, and other groups have estimated considerably higher losses for the total program. The Congressional Research Service noted, in response to a Sierra Club report, that " ... essentially no timber sales receipts were deposited in the General Treasury in FY1996 to offset timber program expenditures. Thus, one can conclude that $791 million is a 'reasonable estimate' of the cost of the Forest Service's FY1996 timber program to taxpayers."[40]

Impact On Recycling and Reuse

Any company that can purchase the basic material of its business at below market prices has gained a competitive advantage. It can reduce production costs, increase R&D, and boost profits, which attracts additional investment.

Below-cost timber sales help virgin-fiber products depress markets for recycled paper and pulp products. When artificially low prices increase the quantity of timber sold, prices for virgin fiber and pulp can also be lower, dragging down the price for recycled pulp which, for market reasons, is generally priced lower than virgin pulp.

To be competitive, recycling companies need capital and R&D investment to improve existing technologies and develop new ones. Considerable research is needed to improve deinking capabilities in paper recycling, and to develop new collection techniques and separation technologies for recovered paper. Reduced revenues in recycled paper manufacturing resulting from competition with subsidized virgin paper production hinders incentives for firms to develop markets and technologies for collection and processing of recycled paper.

Meanwhile, after decades of subsidies, most virgin paper companies are highly integrated. Their ownership or long-term leases on forest lands allow them to adjust prices for raw materials and finished products as markets change. Recycled paper companies, on the other hand, do not own the paper collection systems that provide their feedstock. The costs of a still-developing recovered paper collection system, along with newly-capitalized deinking mills, compared to the long-established and subsidized timber-cutting production system explains some of the higher cost for some recycled papers compared to virgin papers.

Below-cost timber also undermines the development of building deconstruction and timber reuse, resulting in large quantities of construction and demolition (C&D) debris nationwide, much of which could have been reused if economic factors favored remilling and recycling instead of cutting new wood. Since paper and C&D make up the majority of materials in community landfills, even a small price effect that reduces the competitiveness of recycled wood and paper products has a large impact on the viability of markets for local government recycling programs.

3. Forest Roads Construction

$31 Million average per year
$157 Million over 5 years[41]

The U.S. Forest Service timber program assists logging companies in cutting and removing timber by reimbursing companies' road-building costs through credits towards additional timber and sale prices reduced even below already inadequate prices, and by direct federal spending on road construction. This program uses tax dollars to pay the timber industry's normal costs of doing business.

These roads destroy habitats, disrupt wildlife migration routes, and frequently cause serious soil erosion and stream sedimentation. In 1999, the administration imposed a freeze on road building in some federal forests, although it exempted most of the Northwest and the largest federal forest in Alaska.[43] The 18-month moratorium is expected to prevent construction of less than 360 miles of road and the harvesting of less than 4% of annual timber harvests.[44]

Impact On Recycling and Reuse

Road construction and upkeep is expensive. This subsidy reduces the costs of the forest products industry, increasing profits and diverting additional investment toward virgin timber production and away from recycling. It also, over decades, has encouraged the building of paper pulping and manufacturing facilities in remote areas, near their feedstock, trees. Now, when sustainability concerns should encourage a shift to making recycled paper, these paper mills are far from recovered paper sources, which concentrate in urban centers. In addition, many virgin pulping facilities are not built to accept pulp from sources outside an integrated tree-pulping mill, such as recycled pulp. Adding a recycled deinking mill to a paper mill that already has adequate virgin fiber pulp capacity increases costs for making the recycled paper, resulting in higher finished paper prices that then discourage customers from buying it.

"It's bad enough when public officials fail to stop private interest from degrading the environment. It's even worse when government subsidizes the harm, as it does with logging roads in National Forests."
Philadelphia Inquirer[42]

4. Forest Service Salvage Fund

$ 34 Million average per year
$171 Million over 5 years[45]

The U.S. Forest Service sells insect-infested, dead, damaged or downed timber for only a fraction of the cost of green (commercial-quality) wood. Salvage sales revenues go into a Salvage Fund, which is not accountable to Congress and is not returned to the U.S. Treasury, therefore affording no revenue to the taxpayer.

Sometimes the Forest Service includes some higher-value timber as part of the low-value salvage sale in order to make the sale more attractive. In fact, the percentage of higher-value timber sold as salvage may be quite high. As one Forest Service manager reported, "We were told [at a meeting] that virtually every sale should include 'salvage' in the name. . . . Even if a sale is totally green [non-salvage], as long as one board comes off that would qualify as salvage on the Salvage Sale Fund Plan, it should be called salvage."[46] Allowing forests to keep the sales receipts instead of returning them to the Treasury creates an incentive to promote salvage sales and enhance sales by adding higher value green trees to the salvage offering.

If the Forest Service's Salvage Fund were eliminated and all Forest Service expenses were required to be Congressionally appropriated, significant revenues could be

expected to be returned to the U.S. Treasury and there would be less incentive to promote timber sales.

Impact on Recycling and Reuse

The unmonitored Salvage Fund structure offers timber companies another form of below-cost materials, discouraging development of reuse options and placing companies that produce recycled paper, recycled paper products, and recycled timber products at a disadvantage.

HARD ROCK MINING SUBSIDIES

Subsidy	Average over 1 year ($ Millions)	Total over 5 years ($ Millions)
5. 1872 Mining Law	200	1,000
6. Mining Percentage Depletion Allowance	269	1,345
7. Expensing Exploration and Development Costs	27	135
8. Improving Bond Requirements	NA	NA
Total	496	2,480

Federal subsidies for mining began in the late 1800s, in the era of gold rushes and itinerant prospectors. Congress intended to encourage mineral extraction to speed economic development and settlement of the Western frontier. Today, the pick-and-shovel miner is a thing of the past, the frontier has been gone for more than a century, and extraction of hard-rock minerals such as iron, copper, tin, lead, and zinc is mostly the business of large, multinational corporations. Nonetheless, mining continues to be heavily subsidized through tax breaks, land giveaways, and taxpayer liability for mine-site cleanup. In combination, taxpayer subsidies for mining cut the industry's tax rate to nearly zero, according to a 1996 Senate Budget Committee report.[47]

These subsidies reduce capital requirements for mining, deter investment in more efficient extractive technologies, and improve the economics of extracting mineral deposits that might otherwise be unprofitable. By reducing production costs, they raise the profits of mining companies, attract additional investment to the industry, and help keep the prices of virgin minerals low. While they have varied considerably from year to year, virgin-minerals prices have been falling for decades, as miners have moved to larger-scale — and often more environmentally damaging — production methods. Low prices for virgin minerals limit the prices recycled materials receive, and fluctuations of virgin mineral markets also lead to instability in those for recycled equivalents. Producers of virgin metals are more likely to weather unpredictable market conditions than recycling-industry firms, which tend to be much smaller and have more limited reserves of capital.

The systematic promotion of mining discourages recycling, reuse, and other practices that conserve materials and energy. Recycling firms receive no comparable special assistance from the federal government. Unlike mining companies, they must write off their capital investments at normal depreciation rates and acquire their raw materials at market prices. Their comparatively low profitability and instability in their markets make it difficult for them to attract capital and discourage research and development investment in recycling and reuse.

While mining firms use huge amounts of subsidized energy, recycling firms get no credit for the very substantial energy *savings* that their operations help create. If energy were priced correctly, the avoided energy costs would be its own reward. Mines, which cause far more environmental destruction than recycling, benefit from special exemptions from environmental laws such as the Bevill Amendment to the

Resource Conservation and Recovery Act, which exempts much mining waste from hazardous waste regulations. Recycling operations must comply with the same environmental standards as most other industries.

Mining is among the most damaging of all human activities. It often results in increased erosion, siltation of lakes and streams, acid drainage, and toxic metal contamination. According to the now-closed U.S. Bureau of Mines, 12,000 miles of rivers and 180,000 acres of lakes in the U.S. have been polluted by mining damage.[48] Mining often wipes out fish populations, destroys habitat for other wildlife, and poisons surface and underground drinking supplies. In 1987, the most recent year for which data are available, the U.S. mining industry generated 1.7 billion tons of waste[49] — nine times more than all the municipal solid waste generated in the same year. Not all of this waste is hazardous, but the Environmental Protection Agency estimates that mining alone generates nearly as much hazardous waste each year as all other American industries combined. Such wastes are an enduring legacy. They can remain toxic for thousands of years, long after mine operators have taken their money and run.

Mining and smelting virgin minerals also takes a huge amount of energy, making the industry a major contributor to acid rain, other types of conventional air pollution, global warming, and other impacts of energy production. Mining and smelting accounts for 5-10 percent of annual world energy use, and about 3 percent of U.S. energy consumption.[50]

5. 1872 Mining Law

$200 Million average per year
$1 Billion over 5 years[51]

The 1872 Mining Law that governs hardrock mining is an enormous waste of taxpayer resources. Each year, $2-4 billion worth of minerals are taken from public lands by miners who pay no royalties for this wealth yet obtain title by paying $2.50-$5.00 per acre to the federal government.[52] Under the law, anyone may explore open public lands for hardrock minerals, including gold, silver, lead, and many others. Anyone filing a claim has an automatic right to extract minerals found there.

Since the law was enacted, the U.S. government has given away more than $245 billion worth of mineral reserves through royalty-free mining.[53] For example, in 1990 the Stillwater Mining Company patented 2,000 acres of national forest land at the low cost of $10,000 in order to extract minerals worth an estimated $35 billion.[54] Taxpayers have been left the financial burden of cleanup costs estimated to be between $32 and $72 billion for more than half a million abandoned mines.[55]

Instead, taxpayers should be guaranteed a fair market return for publicly-owned minerals extracted by mining companies. For example, an 8% royalty could raise roughly $1 billion over five years. Permanently eliminating mineral patenting would save an estimated $10 billion from new patents.

"I consider [1872 Mining Law reform] the most egregious thing that the Senate turns its back on every year . . . .it is so gross, so egregious, that people can't believe it is factual, that it is actually happening."
Senator Dale Bumpers (D-AR)

Impact On Recycling and Reuse

The 1872 Mining Law gives mining companies a significant economic advantage over recyclers, since subsidies and tax benefits result in mine operators paying prices well below market for raw materials such as iron, copper, and zinc. They often get title to public lands (which may be valuable for development and other purposes), as well.

Recycling companies, on the other hand, must compete against the artificially low prices for mining materials. The result is that prices paid for recyclable materials rarely cover the full costs of collecting and processing them, thus keeping community recycling collection systems in a continually jeopardized situation. Although recycling would be far more economical and profitable than mining if all of the true mining costs were included in materials and product prices, mineral extraction continues to be the more attractive investment.

6. Mining Percentage Depletion Allowance

$269 Million average per year
$1.345 Billion over 5 years[56]

Percentage depletion allowances were first enacted in 1913, and have been modified several times since then. They permit mining firms to deduct a fixed percentage, usually 5-22%, depending on the mineral, from their gross annual income, instead of depreciating their actual costs at the rates required for other businesses. Although the annual deduction is capped by law at 50% of taxable income, overall deductions are not limited to the initial cost of the investment. As a result, total deductions frequently exceed original investment costs.

Because the percentage depletion allowance deducts a fixed rate that does not correspond to the mine's actual value, mining companies are able to deduct more than the original cost of the investment. As a result, taxpayers subsidize the normal business costs of mining companies.

"The percentage depletion allowance permits mineral producers to continue to claim a deduction even after all the investment costs of acquiring and developing the property have been recovered."
Senate Budget Committee report 1996[57]

The percentage depletion allowance creates an incentive to keep mines operating regardless of the potential value of the minerals to be extracted. Perversely, the more toxic the mineral, the greater the subsidy: mercury, zinc, and uranium miners, for example, receive the highest depletion allowance, while less toxic substances, such as sand and gravel, get lower rates.

Impact On Recycling and Reuse

Unlike mining companies, recycling businesses do not rely on taxpayers to cover their normal business costs. Their profit margins are often razor thin or nonexistent, no comparison to capital created by mining investment costs reimbursed to 100% and beyond. Such out-of-balance accountings of materials costs put metals recycling businesses at a disadvantage in terms of financing for research, development and facilities, as well as for incorporating more of their materials into finished product manufacturing.

Mining subsidies also encourage mining activity that otherwise would not occur, including allowing mines to continue operating that would not otherwise survive. The resulting increased supply of virgin minerals discourages use of recycled goods and therefore development of recycling industry alternatives to virgin mineral use.

7. Expensing Of Exploration And Development Costs

$27 Million average per year
$135 Million over 5 years[58]

The Internal Revenue Code permits mining companies to immediately deduct costs associated with exploration and development for locating valuable mineral deposits in the year the costs are incurred rather than over time as most other businesses must do.

Taxpayers give the mining industry at least $27 million each year through this tax loophole. Eliminating expensing and capital gains status for mining exploration and development costs would save $135 million over five years.

Impact On Recycling and Reuse

Expensing reduces the effective tax rate of mining firms relative to all other businesses, including those in recycling and reuse, and thus promotes virgin material use. Expensing also has adverse environmental consequences by encouraging the development of raw materials as opposed to recycled.

8. Improving Bond Requirements

$ NA, substantial per year[59]
$ NA, substantial over 5 years

Frequently, as a mine becomes depleted, it is abandoned by its operators to become the financial burden of the public. One way that the federal government has sought to hold mining companies responsible is through insurance bonding requirements. This requires that a mine operator possess the financial resources to pay for any potential cleanup costs. Present bonding requirements are insufficient and weakly enforced by the government, often leaving the taxpayer to pay for cleanup.

For example, on December 3, 1992 the Canadian-owned Summitville Consolidated Mining Co. declared bankruptcy and abandoned its mine in Colorado, leaving only a $4.7 million bond for a mine site whose estimated reclamation cost is $120 million.[61] (This is also an example of how century-old policies favoring cheap raw materials are no longer benefiting the U.S.). The recent bankruptcy filing of Pegasus Gold, Inc. has raised similar questions about the cleanup of the environmentally troublesome Zortman-Landusky Mine in Montana.

At present, the Mineral Policy Center calculates that there are 557,650 abandoned mines in need of reclamation in the United States and estimates the cost to taxpayers of cleaning them up at $32 to $72 billion.[62] This represents a largely unrecoverable cost to the public that might have been prevented by improved bonding requirements.

The existing Bureau of Land Management regulation[63] for hardrock mining bonding should be strengthened to require hard rock miners to post reclamation bonds sufficient to pay for complete cleanups costs. Bonding requirements should be extended to cover usage below five acres.

In 1996, Interior Secretary Bruce Babbitt initiated a review of the federal 3809 regulations that govern hardrock mining on public lands, but publication of draft rules was postponed by Congress. On February 28, 1997 the Bureau of Land Management published an amendment to the hard-rock mining regulations that requires bonding of all operations greater than 5 acres on public lands but does not specify what full reclamation requires nor require certification on all bonds by a professional engineer.

Impact On Recycling and Reuse

Not requiring adequate site cleanup coverage lowers costs, giving the hard rock mining industry a competitive advantage over producers of recycled minerals.

"American taxpayers have too long borne the cost of cleaning up after unscrupulous miners and the bonding rule will ensure that the cost of cleaning up the disturbance caused by mining will be placed squarely on the mining communities' shoulders where it belongs."
Carlos Romero-Barcelo, Delegate from Puerto Rico [60]

ENERGY SUBSIDIES

Subsidy	Average over 1 year ($ Millions)	Total over 5 years ($ Millions)
9. Percentage Depletion Allowance	276	1,380
10. Intangible drilling costs (IDCs)	9	45
11. Passive Loss Tax Shelter	38	190
12. Alternative Fuel Production Credit	543	2,715
13. Enhanced Oil Recovery	245	1,225
14. BPA: Electric Power Subsidies For Aluminum	200	1,000
Total	1,311	6,555

Estimates of current federal energy subsidies range from the Energy Department's $14 billion figure[64] to the Alliance to Save Energy's value of $36 billion.[65] Military defense of oil supplies alone is estimated to be $10.5 to $23.3 billion.[66] An Environmental Protection Agency study of disincentives to recycling concluded that energy subsidies were the single most important subsidies for primary materials production.[67] By keeping the prices of oil, gas, coal, and electricity artificially low, energy subsidies provide a major structural advantage to extractive industries, which are generally far more energy-intensive than recycling and reuse. Making aluminum from used metal, for example, requires only 5% of the energy required for smelting ore into brand-new metal. It takes, on average, about one-eighth the energy to produce recycled plastic than to produce plastic from virgin inputs, and one-half the energy to produce recycled paper (although relative energy-use calculations are complicated by the pulp and paper industry's substantial reliance on energy generated from burning its own wastes).[68]

Energy subsidies also reduce the cost of raw materials for some virgin-materials industries, such as steelmaking and the manufacture of plastics and other synthetic materials. This direct subsidy is surprisingly important, given the large share of energy-bearing minerals these industries consume as feedstocks. About two-fifths of the energy consumed by plastics and synthetic materials manufacturing is actually used as feedstocks, rather than fuels.[69] Similarly, about a quarter of the energy used in steelmaking is actually a feedstock: coking coal, used as a source of carbon, which is an important component of steel.[70]

Not only do primary resource industries benefit from direct subsidies in the form of artificially low feedstock prices, and the special case of federally-subsidized electricity for aluminum, but they also receive indirect subsidies in the form of cheap energy for energy-intensive activities such as mining, smelting, and papermaking. Primary materials industries use more than 7% of all the energy consumed in the U.S. each year.[71]

Energy subsidies encourage continued dependence on fossil fuels and nuclear power. Most people are familiar with the impacts associated with the burning of fossil fuels — air pollution, greenhouse gas emissions — and those connected with the use of nuclear power, including the costs of long-term security to prevent its wastes and fissionable materials from becoming a danger. However, energy extraction also causes

major environmental problems. Coal strip mining causes acid drainage and toxic contamination of land, rivers, and lakes. It can sharply increase erosion and threaten nearby and downstream ecosystems and dwellings with landslides and increased flooding. Oil and gas exploration, development, and extraction cause major environmental problems. These include damage to animal and plant habitats, contamination of land with chemicals used in drilling, and pollution of lakes and streams. It is estimated that the oil industry loses the equivalent of 280 million barrels of oil per year through leaks and spills. Uranium mining and processing have left behind many of the world's most dangerous sites, contaminated with not only toxic chemicals but deadly, long-lived radiation.

Historically, Congress has provided energy subsidies to promote the growth of domestic energy industries, provide secure supplies during wartime (and the Cold War), and reduce U.S. dependence on imported oil. However, production subsidies have helped keep prices low, removing an important stimulus for the development of renewable energy sources and investment in energy-efficient technologies and practices, such as recycling and reuse. Even with energy subsidies in place, domestic oil production, for example, has continued to decline while U.S. dependence on foreign oil has increased. In fact, America's continuing heavy dependence on oil has other unfortunate costs, such as the conduct of wars to protect U.S. access to foreign sources of oil — a major subsidy not included among those listed in this report.

9. Percentage Depletion Allowance

$276 Million average per year
$1.38 Billion over 5 years[72]

"The percentage depletion allowance permits independent oil and gas producers to continue to claim a deduction even after all the investment costs of acquiring and developing the property have been recovered."
Senate Budget Committee report, 1996[73]

Independent oil companies not substantially involved in retailing or refining activities are granted a special "percentage depletion" write-off. The percentage depletion allowance lets these oil and gas companies deduct a flat 15% of their gross income to reflect the declining value of the wells as they become unproductive. Because the deduction can amount to 100% of an operation's net income, for some companies all profits may come from government tax subsidies. In fact, in combination with other subsidies for the oil and gas industry, the percentage depletion allowance subsidy often *exceeds* 100% of the actual value of the energy produced. Eliminating the percentage depletion allowance for independent oil and gas companies could save $1.38 billion over 5 years.

Impact on Recycling and Reuse

The percentage depletion allowance encourages the draining of scarce domestic energy resources while discouraging the development of renewable energy and energy efficiency. The subsidy also allows oil and gas companies to deduct more from their taxable income than their actual investment. This distorts the market, diverting capital into oil and gas production that might be better invested elsewhere. It also contributes to lower oil and gas prices, which encourage continuation of energy-intensive types of production rather than shifting to energy conserving production methods such as recycling and reuse.

10. Intangible Drilling Costs

$9 Million average per year
$45 Million over 5 years[74]

Oil and gas producers are permitted under the Internal Revenue Code to deduct 70% of intangible drilling costs in the year in which they were incurred, rather than as the capital assets wear out or the oil is depleted, which is the normal business practice. These costs include fuel, labor and repairs to drilling equipment. In addition, the remaining 30% can be amortized over a period of five years.

Impact on Recycling and Reuse

The subsidy reduces oil and gas companies' cost of finding and developing a reserve by 75-90%.[76] Since it reduces the effective tax rate, it also provides a higher initial rate of return on investment. The subsidy reduces potential risks of oil and gas exploration and development, attracting additional investment to the industry.

"There is little economic justification for this nonneutral tax treatment of IDCs."
1996 Senate Budget Committee report[75]

11. Passive Loss Tax Shelter

$38 Million average per year
$190 Million over 5 years[77]

Passive loss is the ability of an investor to use losses, deductions, and credits to offset other income. Congress sought to eliminate many similar tax breaks in 1986, but preserved this loophole, ostensibly to promote domestic oil production. The passive loss tax shelter was originally designed to prevent the decline of domestic oil and gas production, helping limit dependence on foreign oil. This tax loophole artificially props up a declining domestic oil industry with taxpayer dollars. It has not halted the decline in domestic oil production, and is costing taxpayers $38 million per year. Eliminating the passive loss tax shelter for investors in oil and gas would save $190 million over five years.

Impact on Recycling and Reuse

The passive loss provision helps divert investment capital into oil and gas and away from cleaner, renewable energy technologies such as solar or wind. It encourages overproduction of oil and gas, contributing to the rapid depletion of this strategic natural resource. It also helps reduce the prices of oil and gas, making recycling of plastics less attractive as well as reducing energy prices, disproportionately benefiting resource-intensive industries.

IMAGINE IT!

12. Alternative Fuel Production Credit

$543 Million average per year
$2.7 Billion over 5 years[78]

There has been little, if any, growth in alternative fuels production since 1980, generating unnecessary losses in the Federal tax revenue.
1996 Senate Budget Committee report [75]

Section 29 of the Internal Revenue Code provides a tax credit for the production of alternative fuels extracted from such sources as slate and tar sands, as well as for synthetic fuels made from coal and gas from geo-pressurized brine. In practice, most of the credit has gone to oil and gas production. In 1980, the total cost of the subsidy was initially estimated at $500 million to $1 billion over 22 years. To date, the subsidy has already cost taxpayers far more: $5.4 billion through 1996, and an estimated $4.6 billion more until its phase-out, according to the U.S. Treasury. The credit has promoted production of coalbed methane over that of conventional natural gas.

The subsidy has not led to major increases in alternative fuels production, its original goal. According to the Senate Budget Committee, "the credit's effects have, generally, not been sufficient to offset the disincentive effects of low and unstable oil prices, the high cost of alternative fuels production and the taxpayer's unawareness of the availability of the new credit." Instead, the credit has been used to develop drilling and production technologies needed for hard-to-tap oil and gas reserves.

The drilling and production of non-conventional fuels frequently causes major environmental damage, such as erosion and contamination of nearby rivers and lakes. In Michigan alone, the subsidy has led to the fragmentation of more than 1,000,000 acres of public and privately owned forest. Production of such "alternative" fossil fuels is often highly polluting and can require considerable energy inputs.

Repealing the non-conventional fuel production credit for oil and gaseous fuels derived from alternative energy sources would save an estimated $2.7 billion over five years. The credit was set to expire in 1998, but a "placed-in-service" loophole will extend the production credit until 2002 for facilities already in service by 1996.

Impact on Recycling and Reuse

Subsidizing hard-to-extract fuels continues the unnecessary waste of energy rather than sending a market signal that clearly rewards production methods such as recycling and reuse that dramatically reduce energy requirements. If energy were properly valued, these hard-to-extract fuels would not be attractive and investors would recognize the inherent superior stability of energy-efficient industries.

13. Enhanced Oil Recovery

$245 Million average per year
$1.2 Billion over 5 years[80]

Oil companies investing in tertiary enhanced oil recovery operations are allowed a tax credit equal to 15% of their costs. Tertiary recovery methods include the use of chemical or thermal fluids, steam, or alkaline flooding to extract otherwise inaccessible oil. Immediate deductions for the injectants used in enhanced recovery are also allowed. Tax credits and immediate expensing for enhanced oil recovery encourage overproduction of domestic oil at taxpayer expense. Without this tax incentive, the recovery of this oil would be prohibitively expensive.

In general, it is environmentally desirable to extract all of the oil in a well to avoid waste and seepage. However, much greater energy savings could be gained by eliminating current waste in the oil and gas industry. In addition, chemicals used in enhanced oil recovery methods often lead to contamination of drinking water, soil, and wetlands which kills animal and plant life.

Eliminating the preferential tax credit for enhanced oil recovery would save an estimated $245 million over five years.

Impact on Recycling and Reuse

The various tax subsidies for the oil and gas industry have not reversed the continued decline in domestic oil production or cut the country's dependence on foreign oil. But they have obscured the financial attractiveness of energy-conserving industries such as recycling and reuse.

"A three month review of Bonneville's decision making by the Oregonian found a deliberate attempt by the agency to favor aluminum companies."[82]
Portland Oregonian

14. Bonneville Power Administration: Electric Power Subsidies For Aluminum Smelters

$200 Million average per year
$1 Billion over 5 years[81]

The Bonneville Power Administration (BPA) is a Department of Energy agency that sells subsidized electricity from a network of 29 federally owned dams on the Columbia and Snake rivers, and from one nuclear power plant. Its low power rates have attracted over 30% of U.S. aluminum production to its service area. To meet projected growth in Pacific Northwest electricity demand that never materialized, BPA spent billions on a nuclear power program that has encumbered it with massive debt and four defunct nuclear power plants that were abandoned when only partially built. Only one of the five nuclear power plants planned for the project was completed, with actual costs running far over projections. Changes in federal law permitting independent power suppliers have opened the region to market-savvy competitors. As a result, Bonneville has increasingly found it difficult to compete in the open market while facing scrutiny of its heavily subsidized, debt-ridden operation.

BPA wastes taxpayer money by selling subsidized electricity at preferential rates to aluminum smelters and other users. For example, according to the BPA, the average U.S. residential rate from a public utility in 1996 was 8.4 cents per kWh and its own average Northwest residential rate was 5.4 cents per kWh. But its wholesale power rate for Direct Service Industries (DSIs) (primarily aluminum smelters) was usually near 2.26 cents per kWh.

Furthermore, DSIs do not pay all of the costs that BPA incurs to serve them. The subsidy to the aluminum industries in the

Northwest is conservatively figured to be $214 million a year.[83] In fact BPA set the DSI power and transmission rates in 1996 based on a study provided by DSI Industries Inc., the trade group which represents the industry.[84]

To finance its capital programs, BPA has received discounted loans from the federal Treasury, with a current debt of approximately $17 billion,[85] along with generous repayment schedules. From FY 1992 to 1996, the General Accounting Office estimates that Treasury loans to BPA cost taxpayers nearly $2 billion,[86] with one third of its power going to aluminum smelters. For FY 1996, GAO estimates the net cost to U.S. taxpayers at $400 million in costs for loans that allow BPA to pay interest far lower than normal, with generous repayment terms.[87]

Over 30% of domestic primary aluminum production is in the BPA service area. Some of the other 70% of production receives subsidized electricity from publicly-owned power plants, as well.

Below-cost sales of electricity encourage unnecessary electrical consumption, requiring additional power sources such as the fiasco nuclear power project that produced only one working nuclear reactor out of the five planned, burdening taxpayers in the region with the remaining debt of $7 billion.[88] Furthermore, many of the BPA's 29 federal dams obstruct the migration of salmon, leading to a steady decline in their runs, some of which are nearly extinct. The BPA estimates that it will need to spend $1 billion through 2001 on fish and wildlife programs to try to mitigate the impacts of power generation.

Eliminating preferential electrical rates for aluminum smelters would save approximately $200 million a year or $1 billion over 5 years.[89]

Impact on Recycling and Reuse

Electricity sold below cost disproportionately benefits virgin aluminum production. Aluminum recycling requires far less energy than the production of virgin aluminum and therefore is disadvantaged by energy subsidies. The average energy required to process virgin aluminum is 250.7 million Btu/ton while the average energy necessary for recycled aluminum is 11.8 million Btu/ton, according to a 1994 EPA report.[90] The Aluminum Association states that recycling aluminum requires only about 5% of the energy used in making virgin aluminum.[91]

Furthermore, this subsidy is available only to existing smelters. It therefore acts as a barrier to entry for new smelters using only recycled aluminum.

WASTE FACILITIES

After materials are made into products, distributed to consumers, and then reach the end of their useful product life, they then require some method of disposal. Most could be collected and recycled into new products, saving resources, energy, and water, plus reducing pollution. However, even at this end of the cycle, recycling competes with federally subsidized industries — incinerators and landfills. Capital-intensive waste disposal facilities, rather than recycling, qualify for tax-breaks such as Private Activity Bonds, which patently discriminate against recycling. Further, because waste disposal facilities tend to be far more capital-intensive than recycling, they benefit disproportionately from all subsidized financing mechanisms, even when recycling does qualify for the subsidy. In that case, subsidies are often underwriting the less efficient choice, one that would prove less attractive if costs were fully incorporated. Other subsidies embedded in current out-of-sight, out-of-mind waste disposal policies are less direct and more difficult to quantify, although still important.

The Public Utilities Regulatory Policy Act of 1978 established guaranteed markets for certain high-priced electricity from waste-to-energy incineration plants. In addition to federal electricity subsidies for incinerators, cities and states have in many cases supported incineration at the expense of recycling. Though recently repealed, the Illinois Retail Rate Law would have cost state taxpayers $10 billion over 20 years, according to the Illinois Commerce Commission, by requiring state utilities to purchase over-priced electricity generated at incinerators.

Deeper, more-structural subsidies are so ingrained that many people forget that there is an alternative to the $36 billion taxpayers annually pay for waste disposal. The costs of disposing of what is generally thought of as "waste" are often hidden in property taxes and other obscure, less-direct forms of taxation. Few people pay for disposal costs per trash can, but in communities that do, refuse costs have gone down and recycling rates have increased. Further, communities often incorrectly view recycling as an additional expense, rather than as a cheaper alternative to current waste disposal practices, because it is often simply added onto, rather than substituted for, existing collection of discarded materials.

ECO-CYCLE

15. Private Activity Bonds $ NA

Currently, 70% of all bonds used to finance solid waste facilities are Private Activity Bonds (PABs),[92] but most recycling facilities do not qualify for the bonds. The "private activity" refers to the substantial portion of their benefits that are reaped by individuals or businesses rather than the general public. Federal law treats income earned on PABs as tax-exempt, even though they primarily benefit private individuals and entities, on the theory that infrastructure development serves the public interest through providing needed services to local jurisdictions and possibly offsetting the need for public investment.

Before the Tax Reform Act of 1986, state and local governments issued an unlimited amount of PABs. After the Tax Reform Act of 1986, PABs issued for privately-owned solid waste facilities were subject to a per-state limit of $150 million or $50 per capita. However, PABs used to finance government-owned disposal facilities have no such volume cap.

There are more than 124 municipal solid waste incinerators in the United States. They often emit harmful levels of toxic substances into our air and water, such as cadmium, lead, mercury and dioxins as well as substantial amounts of conventional pollutants, posing threats to human health and the environment. The more than 3,000 municipal solid waste landfills in the United States present current and future threats to groundwater and to climate stability because landfills are a substantial source of methane, a significant greenhouse gas.

Impact on Recycling and Reuse

The use of private activity bonds to finance new private and governmentally owned solid waste facilities should be eliminated. PABs distort investment decisions because interest from the bonds is tax-free. Investors buy them to shelter income from taxes rather than buying taxable corporate bonds or stocks. The lack of taxes on interest from PABs allows issuers such as solid waste facilities to obtain capital at below normal market interest rates, at the expense of taxpayers.

PABs subsidize the financing of landfills and incinerators, making it cheaper to dispose of materials than to recycle them. Legally, most recycling facilities do not qualify for PAB financing. Most recyclable materials, such as paper, plastic and cardboard, have commodity prices that prevent them from being classified as "valueless" — a criterion for PAB eligibility. Although some recycling facilities are eligible to use PABs, most of the bonds go to landfills and incinerators, since they are generally more capital-intensive than recycling facilities.

Waste facilities are critical to continued resource extraction. In order to justify continued resource-intensive production, products that are no longer wanted must be "thrown away" — somewhere. Resource extraction is based on a linear production model, with virgin materials industries never being required to concern themselves with the end results of their production. Recycling and reuse, on the other hand, employ a circular production model. They inherently incorporate their materials' "disposal" method into their processing and product manufacturing, as the source of their feedstock. However, so long as facilities that waste resources, such as incinerators and landfills, are favored by government subsidies, the environmental and economic value added by materials-efficient industries will not be recognized and rewarded.

INDIRECT FEDERAL SUBSIDIES THAT UNDERMINE RECYCLING, REUSE, AND RESOURCE CONSERVATION

In addition to the $13 billion in direct subsidies identified in this report, many indirect subsidies also provide a substantial economic advantage to virgin materials industries.

Indirect Energy Subsidies

Energy subsidies are a pervasive source of bias. Because recycling generally requires much less energy than production of virgin materials, low energy prices disproportionately benefit extractive industries. Estimates of annual federal energy subsidies range from the Energy Department's $14 billion figure to the Alliance to Save Energy's value of $36 billion. Taxpayers have paid more than $800 billion in energy subsidies over the past 80 years, according to the U.S. Department of Energy.[93]

Indirect Water Subsidies

Just as recycling industries use significantly less energy than virgin materials industries, they also use significantly less water, often yielding water savings as high as 58%.[94] EPA's study on disincentives to recycling even extends the potential impact of water subsidies to include ways that increased water use can reduce energy requirements, pointing out that, "primary petroleum refineries, utilities and mining operations are able to reduce energy costs and capitalize on what may be an indirect federal subsidy by consuming large volumes of water. This substitution of less costly water for more costly energy could further hinder the competitiveness of recyclables."[95]

Large water consumers, however, such as paper mills, petroleum refining and steel manufacturing, tend to locate their facilities adjacent to bodies of water so that they can take the water in as part of their operations. Usually they must have a permit to access the water. In the past, companies often dumped their wastes into the water, but now discharge permits are required to control potential pollution problems. However, paper mills continue to be a persistent source of toxic dioxins and organochlorines from bleaching operations.

When using water from municipal systems, industries often pay less than normal for the true cost of the water plus the associated wastewater treatment. More often, large industries draw their water directly from streams or lakes with no direct payment for the right, yet the very act of withdrawing the water and returning it in a slightly different state can affect river ecology. If water were priced according to consumption, the significant environmental and economic savings afforded by recycling businesses would be more obvious to investors, producers and customers. Accurate economic reflections of water use would also tend to make energy prices more realistic.

Indirect Transportation Subsidies

Transportation subsidies are also likely to benefit extractive industries more than recycling. The federal government doesn't just build logging roads in national forests — it also builds and maintains a large share of major highways. Virgin materials often come from remote areas, where major highways would less likely be built were it not for trucking of logs and minerals.

Shipping distances for virgin materials are also likely to be longer than those of recycled materials, which are more often

processed close to where they are collected. Shipping distances for recyclables would likely be even shorter if they constituted a much higher share of manufacturing feedstocks. This is because paper mills and metal smelters would tend to move, over time, closer to cities, the source of most used materials. Already, new deinking mills, which process used paper into new papermaking pulp, have located near large urban centers, where discarded paper is abundant.

In addition, heavy trucks, likely to be traveling longer distances with virgin materials, pay less than 65% of the federal and state costs associated with their use of the roadway system, according to the Federal Highway Administration. Some resources, such as oil, are transported by barge on inland waterways in certain parts of the U.S. Costs to operate, maintain and develop the inland waterway system were estimated to cost $700 million in 1990, borne typically by taxpayers, not the users.

Indirect Tax Subsidies

Federal tax policies that discourage the hiring of additional workers and encourage capital expenditures also hurt recycling, since recycling is generally more labor-intensive than virgin production. Significant write-offs for capital equipment encourage logging, mining, and waste disposal, all of which employ relatively few workers but require substantial capital investments. Favorable federal tax treatment for municipal bonds also favors more capital-intensive incinerators and landfills over recycling.

The interaction of state and federal tax calculations compounds the impact of federal tax policies favorable to virgin materials and waste industries. Because most states assess state tax liability on the basis of federal taxable income, industries that benefit from federal tax breaks receive an incremental subsidy at the state level. The Institute for Local Self Reliance estimated in 1996 that this interaction augments federal tax subsidies by about three percent.

Indirect International Subsidies

Also important, but difficult to quantify, are international economic factors. The World Bank, the International Monetary Fund, and other multilateral institutions have promoted extractive industries in many countries, particularly in the developing world, as have bilateral trade and aid subsidy programs.

U.S. policies are not alone in favoring extractive industries at the expense of recycling and reuse. A wide variety of national subsidies and international market factors tend to favor virgin-materials production. International development policies, as well as funding from multilateral development banks, tend to encourage poor countries to focus on extracting and selling their natural resources to obtain foreign exchange, even when markets for such commodities may be depressed. The cumulative effect of many countries simultaneously pursuing such policies tends to keep prices of virgin minerals and timber low. Markets for many materials are international, so that subsidies in one country can easily affect materials prices in many others.

For example, in 1996-98, virgin papermaking pulp shipped from countries that are liquidating their forests for cutthroat prices undercut pulp prices in the U.S. While both virgin and recycled deinking pulp markets suffered, recycling mills were hardest-hit, both because they peg their prices below virgin pulp and because their facilities are newly-capitalized. Several new high-grade paper deinking mills were built in 1994-1996, but many closed not long after opening, crippled by economic problems exacerbated by the world pulp markets.[96]

Multinational firms have used their economic leverage to obtain highly favorable terms on nationally-owned resources, have

used transfer pricing and other mechanisms to avoid taxation, and have often avoided having to clean up their mine sites or reforest their clearcuts. All told, such factors certainly have a significant downward effect on virgin materials prices.

Aluminum production is perhaps the most dramatic example of a virgin materials industry that receives heavy subsidies around the world. The Canadian province of Quebec has given huge subsidies to aluminum smelters in the form of extraordinarily cheap hydropower. The province has even shared the risk of constructing smelters, in order to encourage their construction. The effective subsidy of such practices has been calculated by Canadian researchers at $171,000 (U.S.) per worker — per year! — employed in the province's aluminum industry.[97] The dams that power Quebec's smelters are among the most controversial in the world. They threaten one of North America's most critical waterfowl habitats and inundate lands inhabited for thousands of years by the area's Cree and Inuit peoples, who vehemently oppose the power projects. Other countries — notably Ghana, Australia, and Brazil — offer similarly subsidized electric power to aluminum producers. All told, such practices exert a sharp downward effect on the price of virgin aluminum, which sets the upper limit for recycled metal prices.

Indirect Subsidies From Unfunded External Costs

A very important economic advantage for extractive industries is what they *don't* pay for — especially the cost of pollution cleanup. Even when they comply with existing environmental laws, the hidden costs that extractive industries pass on to taxpayers and other economic sectors can be huge. Mining and logging firms don't pay the real costs of the damage they inflict, such as denuded forests, eroded land, and dammed and polluted rivers. It is impossible to precisely quantify all such costs, but they are certainly orders of magnitude higher than the subsidies discussed in this report.

Recycling also incorporates full-cycle production costs by providing upfront an alternative to disposal when it obtains materials for new production. Virgin materials production, however, is based on a throw-away concept, with no incorporation of costs nor assumption of responsibility for the eventual disposal costs the products will incur.

CONCLUSION

To be truly successful, policies must grow and change with the society they produce. Subsidies designed to stimulate development of resource extraction and industrialization may have been well-considered solutions to problems one hundred years ago. They have no place in the U.S. today on the verge of the Millennium and the 21st century.

Appropriate policies today should promote the most efficient use of resources, both primary and secondary, along with the most minimal impacts on the environment and taxpayers. In most cases, such policies will highlight and reward recycling and reuse industries, as well as promote source reduction — preventing waste from being created in the first place by redesigning products and manufacturing systems to eliminate unnecessary resource demand.

Virgin resource extraction industries still have a place. Some recycled products such as paper require a continued infusion of a percentage of virgin fibers to maintain their strength and high quality, since recycled fibers shorten and shred, and a percentage of fibers are lost, in repeated recyclings. Other materials such as steel, aluminum and glass have no such requirement. But in evaluating federal subsidies, virgin resource extraction should be considered a production means of last resort, not the primary way of doing business that it is today, with its already substantial wealth increased by showers of taxpayer and government benefits.

It is time for the U.S. government to revamp its antiquated tax and spending policies that favor virgin materials extraction and waste facilities. The new Millennium requires eliminating government subsidies that fail to help to resolve current and future issues and concerns, not ones that are throwbacks to the previous century. Today's critical concerns are global, environmental, and sustainable. Materials-efficient industries such as recycling and reuse are specifically designed to address them. Eliminating the 15 subsidies listed in this document will make a start on allowing the industries best suited for the future to develop today.

ENDNOTES

[1] A standard method of federal budget analysis

[2] Jerry Powell, Editor-In-Chief, *Resource Recycling*, personal communication. *Resource Recycling* calculates the value of post-consumer recyclable materials each year.

[3] Table 5-1. "Total Revenue Loss Estimates For Tax Expenditures In The Income Tax," in the *Budget of the United States Government, Fiscal Year 2000, Analytical Perspectives* (Washington, DC: Office of Management and Budget, 1999), p. 107. This report uses these more conservative government estimates, rather than those listed in Table 5-5. "Outlay Equivalent Estimates For Tax Expenditures In the Income Tax," p. 117, which offers another financial perspective on the same subsidies. "Outlay equivalents" are "the amount that would be required to provide the taxpayer the same after-tax income as would be received through the tax preference," allowing a comparison of the cost of the tax expenditure with that of a direct Federal outlay (Revenue Loss Estimate). "The measure is larger than the revenue loss estimate when the tax expenditure is judged to function as a Government payment for service. This occurs because an outlay program would increase the taxpayer's pre-tax income." (*Analytical Perspectives,* p. 116)

[4] James S. Lyon, Thomas J. Hilliard, and Thomas N. Bethell, *Burden of Gilt* (Washington, D.C.: Mineral Policy Center, 1993)

[5] *Characterization of Municipal Solid Waste in the United States: 1997 Update*, Office of Solid Waste, Municipal and Industrial Solid Waste Division, U.S. Environmental Protection Agency, Report No. EPA530-R-98-007, (Washington, DC: EPA, 1998)

[6] *Double Trouble: The Loss of Trees and Money In Our National Forests* (Washington, DC: The Wilderness Society, 1998)

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[9] *Characterization of Municipal Solid Waste in the United States: 1997 Update*, U.S. EPA

[10] John E. Young, *Mining the Earth* (Washington, D.C.: Worldwatch Institute, 1992), p. 12

[11] Friends of the Earth, Seattle, WA

[12] EPA reports one million tons of aluminum recycled in 1996, according to *Characterization of Municipal Solid Waste in the United States: 1997 Update*, U.S. EPA

[13] *ibid.*

[14] Kinsella, Susan, "Recycled Paper Buyers: Where Are You?," *Resource Recycling*, November 1998, p. 18-21

[15] *Characterization of Municipal Solid Waste in the United States: 1997 Update*, U.S. EPA. This 5% estimate is regarded as unrealistically high by most recycling professionals with experience in the recycled plastics markets.

[16] Morris, Jeffrey, "Recycling vs. Incineration: An Energy Conservation Analysis," *Journal of Hazardous Materials*, 47 (1996), p. 277-293

[17] *Mineral Commodity Summaries*, U.S. Geological Survey, Dept. of Interior, 1998

[18] James S. Lyon and Nicole Rinke, "The Last American Dinosaur," fact sheet, Mineral Policy Center, Washington, D.C., 1998.

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[20] *Budget of the United States Government, Fiscal Year 2000, Analytical Perspectives* (Washington, DC: Office of Management and Budget, 1999), p. 106

[21] Weidenbaum, Murray, Christopher Douglass, and Michael Orlando, *Toward A Healthier Environment and a Stronger Economy: How to Achieve Common Ground*, Policy Study Number 137, Center for the Study of American Business, January 1997

[22] "Improving the Environment Through Reducing Subsidies. Part I: Summary and

Conclusions; Part II: Analysis and Overview of Studies," OECD, Paris 1998

[23] "OECD Environment Ministers Shared Goals For Action," OECD News Release, Paris, 3 April 1998

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[25] David Kirkpatrick, *North Carolina Recycling Business Study*, for the NC Recycling Business Assistance Center and Self-Help, July 1995

[26] "Northwest Employment Depends Less On Timber and Mining," Northwest Environment Watch, November 1994

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[32] *Characterization of Municipal Solid Waste in the United States: 1997 Update*, U.S. EPA reports 57.3 million tons of municipal solid waste recovered in 1996.

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