

## 4. Trust Funds and Energy Excise Taxes

Excise taxes to fund highways, waterways, airports, and other infrastructure projects have a long history. Energy-related excise taxes and associated trust funds have become increasingly common over the past two decades as a mechanism for internalizing some of the social costs of energy production and consumption. Trust funds have two components: in the first part, the Federal Government imposes a tax on a particular industry; in the second part, the Federal Government assumes responsibility for some liability, often related to the environment, safety, or health. In some cases, responsibility for the liability may formerly have rested with the industry but, because of its poor definition under pre-existing law, has been shifted to the Federal Government. While the amount of the tax is known, the amount and timing of the liability assumed by the Federal Government has yet to be determined through experience. Most established trust funds currently run a surplus. The Black Lung Disability Trust Fund is in deficit, however, and will require Federal appropriations, in addition to current excise tax collections, to maintain its solvency.

The ultimate cost of storing high-level nuclear waste, or reclaiming abandoned, leaking underground oil storage tanks cannot be known with precision. Unlike the older transportation-oriented trust fund programs, the costs may be realized far in the future. Thus, evaluating the full costs of trust fund programs raises complex questions about the actuarial sufficiency of the excise taxes and their accompanying trust funds. This report does not attempt to address that issue, instead describing the principal energy excise taxes and trust funds and reporting on tax collections, trust fund accruals, and outlays from trust funds on a cash basis.

Energy excise tax and fee collections in fiscal year 1999 were approximately \$2.2 billion (Table 10). The collections were earmarked for a variety of energy-related trust funds. The largest share of energy excise tax collections

**Table 10. Estimated Excise Tax Receipts, Fiscal Year 1999**  
(Million Dollars)

Fund	Amount
<b>Excise Taxes Dedicated to Environmental Trust Funds or Designated Funds</b>	
Leaking Underground Storage Tank Trust Fund: Gasoline and Other Motor Fuels . . . . .	212
Oil Spill Liability Trust Fund: Crude Oil <sup>a</sup> . . . . .	0
Pipeline Safety . . . . .	29
Aquatic Resources Trust Fund: Motorboat Gasoline and Other Fuels . . . . .	205
Abandoned Mine Reclamation Fund . . . . .	305
Nuclear Waste Fund . . . . .	642
Uranium Enrichment Decontamination and Decommissioning Fund . . . . .	171
<b>Excise Taxes Dedicated to Health-Related Trust Funds</b>	
Black Lung Disability Trust Fund . . . . .	638
<b>Total Collections</b> . . . . .	<b>2,202</b>

<sup>a</sup>The Oil Spill Liability Trust Fund excise tax expired after December 31, 1994.

Source: Office of Management and Budget, *Budget of the United States Government, Appendix 2000* (Washington, DC, 1999). Also earlier editions.

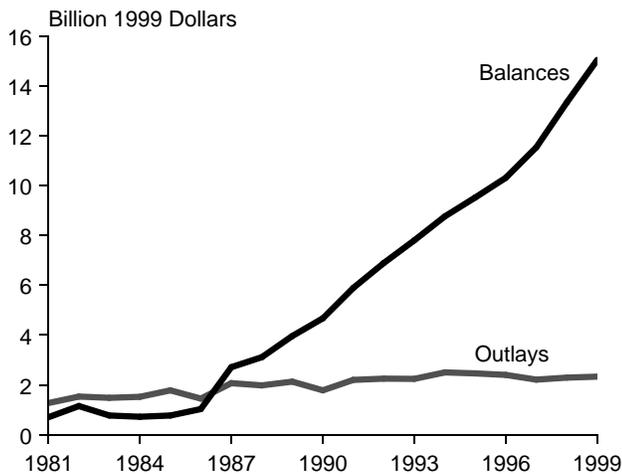
(\$1.4 billion) serves to fund a variety of programs that address environmental and safety problems associated with the production and distribution of petroleum and coal. In addition, approximately \$642 million in user fees is collected annually from nuclear power producers to fund the development, acquisition, and operation of nuclear waste disposal facilities,<sup>44</sup> and \$171 million is collected for the decontamination and decommissioning of uranium enrichment facilities.

## Energy Trust Funds

In recent years, the trust fund concept has been extended to address a variety of safety and environmental concerns (Table 11). Over the past decade, the balances and outlays from many of these energy-related trust funds have grown several-fold (Figures 7 and 8).

Taxes and fees to finance energy-related trust funds are designed to impose costs on energy producers that formerly escaped valuation in the marketplace. They include health risks to production workers or damage to the environment from land damage accidents or waste disposal. Growth in the use of trust funds to finance programs related to environment, safety, and health can be traced in part to a shift to the use of market-based incentives to address these problems. Tying trust fund collections to products and activities responsible for damages is intended to cause their prices to reflect the costs of programs for remediation and prevention and thus more closely reflect the real costs (including social costs) of energy use and production.

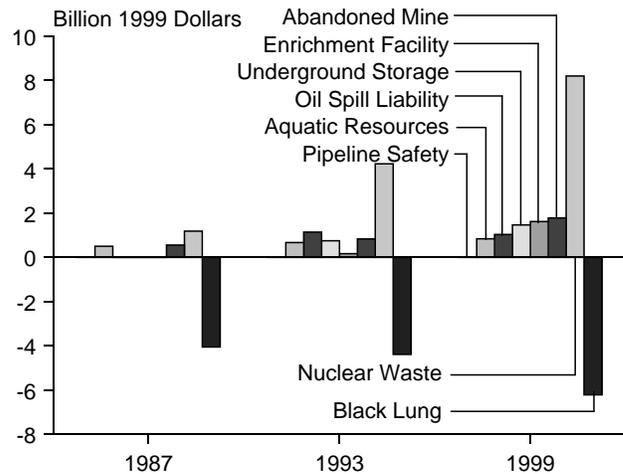
**Figure 7. Total Outlays and End-of-Year Balances for Energy-Related Environmental Trust Funds, Fiscal Years 1981-1999**



Note: Balance total excludes values for the Black Lung Program, which is in substantial deficit.

Source: Office of Management and Budget, *Budget of the United States Government* (various issues).

**Figure 8. Energy-Related Environmental Trust Funds, End-of-Year Balances, Fiscal Years 1987, 1993, and 1999**



Source: Office of Management and Budget, *Budget of the United States Government* (various issues).

<sup>44</sup>The nuclear waste fee payments are projected to decline gradually from current levels (estimated at \$642 million in fiscal year 1999), reflecting a reduction in electricity generation from nuclear plants.

**Table 11. Energy-Related Federal and Trust Funds, Fiscal Year 1999**  
(Million Dollars)

Fund	Beginning Balance	Collections	Other Receipts (Net)	Outlays	Ending Balance	Composition of Receipts	Sources of Receipts
<b>Coal</b>							
Abandoned Mine Reclamation . . . . .	1,644	305	83	247	1,785	305	Per-ton fee on U.S. coal mine production
						83	Interest on balance and late payments
Black Lung Disability . . . . .	-5,837	638	2	1,021	-6,218	638	Excise tax on mined coal
						2	Miscellaneous receipts
<b>Nuclear</b>							
Nuclear Waste Fund . . . . .	7,237	642	507	185	8,201	642	Fees paid by nuclear powered electric utilities
						507	Interest on Investments
Uranium Enrichment Decontamination and Decommissioning . . . . .	1,272	171	474	223	1,694	171	Assessment
						474	Interest and general fund payment
<b>Petroleum</b>							
Leaking Underground Storage . . . . .	1,255	212	66	67	1,466	212	0.1 cent-per-gallon fuel tax
						66	Interest
Oil Spill Liability . . . . .	1,076	0	137	178	1,035	0	Tax expired after December 31, 1994
						137	Interest on balance and other income
Pipeline Safety Fund . . . . .	18	29	5	36	16	29	User fees collected from pipeline operators
						5	Other collections
Aquatic Resources <sup>a</sup> . . . . .	753	205	253	372	839	205	Motorboat fuel tax
						253	Equipment taxes and interest
<b>Total . . . . .</b>	<b>7,418</b>	<b>2,202</b>	<b>1,527</b>	<b>2,329</b>	<b>8,818</b>		

<sup>a</sup>Includes amounts for boat safety, coastal wetlands projects, and sport fish restoration.

Source: Office of Management and Budget, *Budget of the United States Government, Appendix 2000* (Washington, DC, 1999). Also earlier editions.

## Coal-Related Trust Funds

The oldest energy-related trust funds involve coal mine operations. The Abandoned Mine Reclamation Fund is designed to assure that mine operations pay for remedies to the problems that stem from mine closure when the liable firms cannot be located or no longer exist. The problems include risks of mine subsidence, acid drainage, erosion, and despoliation of scenery. Fees of 35 cents per ton on surface coal, 15 cents per ton on coal mined underground, and 10 cents per ton on lignite are collected from mining operations. The first of these fees were paid in fiscal year 1978.

The Black Lung Disability Fund, established by the Black Lung Benefits Revenue Act of 1977, is directed toward work-related disabilities of underground miners. Long-term inhalation of coal mine dust can cause irreversible damage to miners' lungs, although current mine operating practice greatly reduces the risk to miners. The fund was established to compensate for black lung disabilities of miners for whom mine employment terminated before 1970 or for which no mine operation could be assigned liability. The tax on coal from underground mines is the lower of \$1.10 a ton or 4.4 percent of the sales price. The tax on coal from surface mines is the lower of 55 cents a ton or 4.4 percent of the sales price. Coal is taxed at the 4.4-percent rate if the selling price is less than \$25 a ton for underground coal or less than \$12.50 ton for surface coal. The tax does not apply to sales of lignite coal or imported coal. As of 1998 the fund was inadequately supported by coal excise taxes, and substantial allocations from general revenues will be necessary to continue the program (Table 11).<sup>45</sup>

## Nuclear Waste Fund

Concerns about the safety, health, and environmental effects of the disposal of nuclear wastes and controversies associated with the siting of nuclear waste disposal facilities led to the assumption of leadership by the Federal Government in developing appropriate facilities. Current efforts are directed primarily at studying the feasibility of a working site at Yucca Mountain in a desert region of Nevada. Since the establishment of the Nuclear Waste Fund in the early 1980s, collections from nuclear utilities have greatly exceeded outlays, resulting in a trust fund balance in excess of \$7 billion (nominal dollars) at the end of fiscal year 1998.<sup>46,47</sup> The \$507 million of interest income projected to be earned on trust fund balances in fiscal year 1999 exceeds the \$185 million in outlays.

## Uranium Enrichment Facility Decontamination and Decommissioning

The Uranium Enrichment Decontamination and Decommissioning Fund was established by the Energy Policy Act of 1992 to carry out environmental management responsibilities at the Nation's three gaseous diffusion plants. The gaseous diffusion plants are located in the East Tennessee Technology Park in Tennessee, at the Portsmouth site in Ohio, and at the Paducah site in Kentucky. The fund is also used to reimburse licensees operating uranium or thorium processing sites for the costs of environmental cleanup at those sites, subject to a site-specific reimbursement limit. The fiscal year 1999 funding for reimbursing licensees was \$30 million. The balance in the fund at the start of fiscal year 1999 was estimated to be approximately \$1.3 billion.

The fund addresses the cleanup liabilities at the three gaseous diffusion plants that are attributable to historical DOE operations supporting the production of nuclear weapons and commercial nuclear fuel. The future operations of the enrichment facilities will be managed by the commercial entity, the United States Enrichment Corporation (USEC).

---

<sup>45</sup>The potential liabilities from under-accrued trust funds can be large. Annual outlays from general revenues to supplement the Black Lung Disability Trust Fund are \$362 million in fiscal year 1999. The Black Lung Trust Fund is in deficit because, in the past, benefits paid out exceeded tax receipts credited to it. Under present law, the trust fund owes interest on past borrowings. Under Part B of Title IV of the Federal Coal Mine Health and Safety Act of 1969, as amended, the Federal Government also assumed responsibility (without offsetting excise taxes) for payments to disabled coal miners whose claims were filed before July 1, 1973. This program, administered by the Social Security Administration, has outlays of \$560 million in fiscal year 1999. Source: Office of Management and Budget, *Budget of the United States Government, Appendix 2000* (Washington, DC, 1999), p. 1095.

<sup>46</sup>The Department of Energy is required to evaluate periodically the adequacy of the Nuclear Waste Fund fee. A recent assessment report concludes that: "The U.S. Department of Energy (DOE), referred to as the Department, finds that the current 1.0 mill (\$0.001) per kilowatt-hour fee charged on generators of spent nuclear fuel (SNF) is adequate, and recommends that the fee not be changed." U.S. Department of Energy, Office of Civilian Radioactive Waste Management, *Nuclear Waste Fund Fee Adequacy: An Assessment*, DOE/RW-0509 (Washington, DC, December 1998).

<sup>47</sup>Other independent cost estimates state that program cost escalation and a potentially greater number of early retirements may necessitate a significantly higher fee (ranging from 2.6 to 4.5 mills per kilowatt-hour) to fund the program fully. See B. Biewald and D. White, *Stranded Nuclear Waste* (Cambridge, MA: Synapse Energy Economics, Inc., 1999).

Ultimate cleanup of facilities leased from DOE by the USEC will commence when operations are completed and leases are terminated. The fund includes contributions from annual budget appropriations and contributions from commercial utilities based on historical enrichment services, measured in separative work units.<sup>48</sup>

## Petroleum Trust Funds

Petroleum trust funds are directed toward past and potential environmental damages and safety problems arising from the storage and transport of petroleum and other hydrocarbons. Their funding is directly tied to per-unit taxes and user fees on the related products or activities. These programs are clear examples of a shift of Federal efforts, both to reflect the costs of environmental and safety problems in the prices of associated products and to provide funding for remedial and preventive programs.

In terms of fund balances and revenue collections, the largest of the petroleum-related programs is the Leaking Underground Storage Tank Trust Fund (Table 11 and Figure 8). The fund is financed by a 0.1-cent-per-gallon tax on motor fuels, which is estimated to total \$212 million in fiscal year 1999. Programs supported by the fund are directed toward enforcement and cleanup of releases from leaking underground petroleum storage tanks. On an annual basis, expenditures have been small relative to collections. In general, the person or firm owning a storage tank has been made responsible for upgrading and repair of leaking tanks and remediation of environment consequences. The trust fund is intended to finance remediation of sites where the responsible party cannot be found or cannot pay.<sup>49</sup>

The Oil Spill Liability Trust Fund was financed by a 5-cents-per-barrel tax on oil either produced domestically or imported. The fund finances the oil pollution prevention and cleanup efforts of various Federal agencies, including the Coast Guard, the Minerals Management Service, and the Environmental Protection Agency. The Oil Spill Liability Trust Fund excise tax expired after December 31, 1994.

The smallest of the energy-related trust funds is the Pipeline Safety Fund, with fiscal year 1999 outlays of \$36 million. Pipeline safety programs of the States are the major recipients of funds. Revenues for the fund come from user fees collected from pipeline operators.

The Aquatic Resources Trust Fund supports boating safety, coastal wetlands projects, and sport fish restoration. Primary funding derives from a motorboat fuel tax, which is estimated to total \$205 million in 1999.

## Off-Budget Trust Funds

In addition to the trust funds listed in the Federal budget, the Federal Government can also require firms to establish their own trust funds. The most prominent example of such an "off-budget" trust fund is the Nuclear Regulatory Commission (NRC) rulemaking on the decommissioning of nuclear power plants.<sup>50</sup> Decommissioning consists of dismantling the plant, disposing of the radioactive waste, and site cleanup.

---

<sup>48</sup>A separative work unit is the standard measure of enrichment services.

<sup>49</sup>In most cases, there will be an identifiable responsible party, and the cost will be borne by the industry. A 1991 research report estimates that remediation of underground storage tanks will cost \$32 billion to \$67 billion (1990 dollars); however, that estimate does not distinguish between private requirements and Federal requirements. See M. Russell, E.W. Colglazier, and M.R. English, *Hazardous Waste Remediation: The Task Ahead* (Knoxville, TN: Waste Management Research and Education Institute, December 1991), pp. A-3.26-A-3.30.

<sup>50</sup>See M. Pasqualetti and G. Rothwell, "Nuclear Decommissioning Economics: Estimates, Regulation, Experience and Uncertainties," *The Energy Journal*, Vol. 12, Special Issue (1991), which contains 24 articles on various aspects of nuclear power plant decommissioning.

Nuclear power plant licensees are required to certify that sufficient financial resources will be available to decommission their nuclear power plants. Projected costs depend on the size and type of the plant. Licensees have established externally managed sinking funds to finance the future decommissioning costs. Each nuclear operator is required to undertake a site-specific decommissioning study at least 5 years before the projected end of plant operations and to provide any additional funds needed to cover the anticipated decommissioning cost before the date of actual decommissioning.

A recent report by the U.S. General Accounting Office states that, "The estimated cost to dismantle all of the commercial nuclear plants in this country, dispose of the resulting radioactive waste, and clean up the plant sites is about \$30 billion dollars (in 1997 present-value costs), of which about \$14 billion is currently unfunded."<sup>51</sup> The report estimates that the (overnight) cost to decommission a nuclear plant is on the order of \$300 million to \$400 million in current (1999) dollars. To determine the adequacy of decommissioning funds, it is necessary to project both cost escalation and the future rate of return for the monies deposited in the fund.

Nuclear operators recover their trust fund contributions through an increase in electricity rates, which is functionally similar to an excise tax. State and local regulators may impose additional funding requirements on nuclear operators and regulate the conditions under which decommissioning costs can be recovered through higher rates.

The NRC also imposes a somewhat similar requirement on domestic uranium producers, who are required to estimate future reclamation costs and provide guarantees or trust funds equal to the estimated costs. Under the Uranium Mill Tailings Reclamation and Control Act of 1978, the Federal Government assumed the liability for uranium mills and tailings abandoned before 1978.

These "off-budget" trust funds are fundamentally different from the "on-budget" trust funds described above: *the liability for decommissioning expenses continues to lie with the power plant owner, and not with the Federal Government.* Thus, the Federal Government has not assumed any new liabilities but merely required the private sector to make arrangements to meet an important future private liability. Consequently, an off-budget trust fund cannot be considered a subsidy, either positive or negative, in a narrow definition of the term. Rather, the fund is Federal intervention that imposes costs on a particular industry. Off-budget approaches represent a method of dealing with the problems of internalizing social costs.

## Direct Price Effects of Fees for Energy Trust Funds

Receipts from energy excise taxes that are allocated to individual trust funds are generally less than 5 percent of the value of the product excluding taxes. The excise taxes on coal for the Black Lung Trust Fund are estimated to be equal to 3.5 percent of the average freight-on-board mine price of taxable coal in fiscal year 1999 (Table 12). On January 1, 1999, the maximum tax on coal from underground mines was \$1.10 per ton, and the maximum tax on coal from surface mines was \$0.55 per ton. The estimated average excise tax rate on all taxable coal for the Abandoned Mine Fund in fiscal year 1999 is estimated to be about \$0.26 per ton. The nuclear waste fund imposes a 1.45-percent cost increment for power provided from nuclear energy.<sup>52</sup>

---

<sup>51</sup>U.S. General Accounting Office, *Nuclear Regulation: Better Oversight Needed To Ensure Accumulation of Funds To Decommission Nuclear Power Plants*, GAO/RCED-99-75 (Washington, DC, May 1999).

<sup>52</sup>EIA's *Annual Energy Outlook 1999* projects that the national average price of electricity to all sectors will be 6.9 cents (nominal dollars) in 1999.

**Table 12. Energy-Related Trust Fund Receipts Compared to Value of Commodity**

Trust Fund	Fiscal Year 1999 Receipts (Million 1999 Dollars)	Relevant Commodity	Unit	Receipts as a Share of Value of Commodity (Percent)	Receipts per Unit of Commodity
Leaking Underground Storage . . . . .	212	Motor Fuels	Gallons	0.14	0.1 cent per gallon
Black Lung . . . . .	638	Coal Production	Tons	3.4	0.61 dollar per ton
Abandoned Mine Reclamation . . . . .	305	Coal Production	Tons	1.1	0.26 dollar per ton
Nuclear Waste . . . . .	642	Nuclear Generation	Kilowatthours	1.45	1.0 mill per kilowatthour

Source: Office of Management and Budget, *Budget of the United States Government, Fiscal Year 2000* (Washington, DC, February 1999). Production forecasts from Energy Information Administration, *Annual Energy Outlook 1999*, DOE/EIA-0383(99) (Washington, DC, December 1998).

## Energy Excise Taxes for General Revenue

At the outset of this chapter it was noted that the bulk of energy-related excise taxes and fees are collected to support the funding of a range of specific activities. Before 1990, all energy excise taxes were earmarked for specific projects. In 1990, however, the Congress for the first time levied transportation fuel taxes to support general revenue funding. Effective December 1, 1990, the Federal gasoline tax was increased from 9.1 cents per gallon to 14.1 cents, including 2.5 cents per gallon for deficit reduction. The Federal tax was increased to 18.4 cents in October 1, 1993, including 6.8 cents per gallon for deficit reduction. Effective October 1, 1995, 2.5 cents of the 6.8 cents was dedicated to the Highway Trust Fund, and effective October 1, 1997, proceeds of the 4.3 cents per gallon tax on highway motor fuel that were formerly deposited in the General Fund for deficit reduction are now deposited in the Highway Trust Fund.<sup>53</sup> Excise taxes of 4.3 cents per gallon on rail diesel fuel and inland waterways fuel, as well as 6.8 cents per gallon on motorboat fuel, small engine gasoline, and special fuels, continue to be deposited in the General Fund.

Energy excise taxes are disincentives to the production and consumption of the fuels on which they are levied. Excise taxes increase fuel prices and reduce volumes consumed. Some shift in the relative importance of the various modes of transportation occurs, because the various fuel taxes are applied differentially. Generally, the aggregate and compositional effects on fuel consumption can be greater in the long run as consumers adjust to higher prices and increase their demand for more fuel-efficient technologies. It should also be noted that all State and many local governments levy fuel-specific excise and sales taxes on energy commodities such as gasoline. Many States also levy severance taxes on oil, gas, and coal production.<sup>54</sup> State and local programs are not covered in this report.<sup>55</sup>

## Superfund

Cleanup of hazardous waste sites and development of an emergency response capability to hazardous material disasters became part of the Federal Government's environmental protection policies in the 1970s. The Hazardous

<sup>53</sup>Taxpayer Relief Act of 1997.

<sup>54</sup>State oil and gas severance tax collections totaled \$4.6 billion in 1993, and coal severance taxes totaled \$559 million. State motor fuels sales and gross receipts were \$28.33 billion in 1998. Source: U.S. Department of Commerce, web site [www.census.gov/govs/statetax/98tax.txt](http://www.census.gov/govs/statetax/98tax.txt).

<sup>55</sup>State and local severance taxes are discussed in Energy Information Administration, *State Energy Severance Taxes, 1985-1993*, DOE/EIA-TR/0599 (Washington, DC, September 1995).

Substance Superfund was established for these purposes by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, P.L. 96-510). Hazardous substances within the definition of the law included industrial and agricultural chemicals as well as energy products, but half of the revenue collected came from excise taxes on crude oil and petroleum products.

Until the implementation of the Superfund Amendments and Reauthorization Act of 1986 (P.L. 99-499), the Superfund was underfunded. The Superfund excise taxes expired after December 31, 1995. In recent years, however, the Superfund's balance has grown, reaching \$5.12 billion (nominal dollars) at the end of 1998. The fund is largely supported by General Fund appropriations, supplemented by recoveries and interest on the Superfund balance. In the absence of the assumed General Fund appropriation, the Congressional Budget Office projects that the amount in the trust fund available for appropriation would fall to zero in fiscal year 2000.<sup>56</sup>

## Price-Anderson Act

A Federal regulation that continues to have a cost-reducing effect on the nuclear power industry is the Price-Anderson Act of 1959, which placed a limit of \$560 million on the liability of individual nuclear power plants for damage resulting from any one accident. In 1988, amendments to the Act increased the potential liability to \$7 billion per accident. This limit provides a subsidy to the nuclear industry to the extent that insurance premiums paid by the operators of individual plants are reduced.

In a 1983 study, the U.S. Nuclear Regulatory Commission concluded that the liability limits established by the Price-Anderson Act constitute a subsidy; however, the subsidy was not quantified.<sup>57</sup> At issue are the probability distributions for various kinds of accidents on a plant-by-plant basis. From those distributions, the amount of the subsidy can be estimated by calculating the effect of the liability limit on the operators' insurance premiums. In 1990, Dubin and Rothwell developed estimates of nuclear insurance rates and concluded that the amount of the subsidy was \$74.3 million per nuclear unit before the 1988 amendments and \$27.7 million (\$32.5 million in 1999 dollars) per unit after the amendments.<sup>58</sup> For the 110 nuclear units operating in 1991, the total subsidy according to this estimate would have been \$3.6 billion in 1999 dollars, or 6 mills per kilowatthour for the 613 billion kilowatthours of electricity generated by nuclear power plants in 1991.

In September 1999, the nuclear power industry was insured to a maximum of \$9.26 billion per incident. This dollar figure results from adding the maximum available primary insurance coverage (\$200 million) to the maximum available secondary insurance coverage of \$9.06 billion (the maximum per unit was \$83.93 million in 1999, and 108 units held operating licenses for Price-Anderson purposes).<sup>59</sup> EIA reported total output of 673.7 billion kilowatthours from operable nuclear generators in 1998.<sup>60</sup>

---

<sup>56</sup>Joint Committee on Taxation, *Schedule of Present Federal Excise Taxes (as of January 1, 1999)* (Washington, DC, March 29, 1999).

<sup>57</sup>U.S. Nuclear Regulatory Commission, *The Price-Anderson Act: The Third Decade*, NUREG-0957 (Washington, DC, 1983).

<sup>58</sup>J.A. Dubin and G.S. Rothwell, "Subsidy to Nuclear Power Through Price-Anderson Liability Limit," *Contemporary Policy Issues*, Vol. 8 (1990), pp. 73-79.

<sup>59</sup>U.S. Nuclear Regulatory Commission, *The Price-Anderson Act—Crossing the Bridge to the Next Century: A Report to Congress*, NUREG/CR-6617 (Washington, DC, August 1998).

<sup>60</sup>Energy Information Administration, *Annual Energy Review 1998*, DOE/EIA-0384(98) (Washington, DC, August 1999), pp. 241-243.

Appendix A

**Studies of  
Federal Government  
Energy Interventions**