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MASTER

A Taxonomy of Energy Taxes

September 1979

Prepared for:
U.S. Department of Energy
Energy Information Administration
Assistant Administrator for Applied Analysis
Under Contract No. DE-AC01-79EI-10496

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Assistant Administrator For Applied Analysis
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NOTICE: The project that is the subject of this report was approved by the Governing Board of the National Research Council, whose members are drawn from the Councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The members of the Committee responsible for the report were chosen for their special competences and with regard for appropriate balance.

This report has been reviewed by a group other than the authors according to procedures approved by a Report Review Committee consisting of members of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

STEERING COMMITTEE ON THE IMPACT OF TAXATION ON ENERGY MARKETS

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PREFACE

The Energy Information Administration of the U.S. Department of Energy has been asked by Representative Dingell, chairman of the House Committee on Energy and Power, to study the effects of all governmental actions on energy markets. The first phase of its study involves the construction of taxonomies of energy regulations and energy markets. The Energy Information Administration requested the National Research Council to construct one of these taxonomies, that of energy taxes. The Steering Committee on the Impact of Taxation on Energy Markets, under the Assembly of Behavioral and Social Sciences, was formed by the National Research Council to respond to this request.

The Committee's task has been limited to the construction of a classification scheme that identifies taxes that differentially affect energy markets and provides a framework for identifying analytical issues; under its charge it was specifically not to analyze the effects of energy taxes or to consider policy implications of alternative tax systems. The Committee has had to meet a demanding time schedule to be responsive to the needs of the Energy Information Administration and therefore the effort has been a concentrated one.

The Committee appreciates the efforts of all those who have helped it to meet its charge. Robert B. Shelton, associate executive director of the Assembly of Behavioral and Social Sciences, wore a second hat during the Committee's activities by assuming the responsibilities that are normally associated with a study director. The Committee would also like to thank Wendy Huthwaite Siniard for her efficiency and helpfulness as its administrative secretary and Eugenia Grohman for her careful editing of the report.

Milton Russell, Chairman
Steering Committee on the Impact of
Taxation on Energy Markets

A TAXONOMY OF ENERGY TAXES

THE ROLE OF ENERGY TAXES IN ENERGY PRODUCTION AND USE

This report has two major objectives: to provide the U.S. Department of Energy with a taxonomy of the direct federal, state, and local taxes that differentially affect energy markets, including features of general taxes that affect energy differentially; and to describe some of the important analytical questions that are associated with the taxes included in the taxonomy. This report does not provide any analysis of those questions, but rather seeks to inform the Department of Energy of what the analytical issues are and how they might be addressed. This first part of the report discusses energy taxation within the broad context of energy production and use. The second part includes the formal taxonomy and a detailed breakdown of energy taxes by taxing authority and suggests the important issues that are likely to arise in an analysis of energy taxation.

Taxes can affect energy decisions, and it has become apparent in recent years that decisions about energy have become both more important and more controversial. Consumers have become much more aware of the way that energy affects their daily lives both directly and indirectly. They are confronted with problems that range from gasoline lines to the rising costs of heating homes in the winter. They must be concerned not only with the intensity of energy use (for example, how many trips are taken in automobiles), but also with choices about energy-using facilities. With regard to the latter, choices must be made as to the amount of energy used (a smaller or larger car) as well as to the type or form of energy required (gasoline or diesel; fuel oil, gas, or electricity for heat). Furthermore, businesses face some of the same kinds of decisions and must make investments in energy-using equipment on the basis of predictions of relative prices in energy markets. Firms may also have to make decisions regarding the energy efficiency of the products they produce and sell.

The effects of taxes on energy have raised other important issues in discussions of national policies. The combined consumption, production, and investment decisions of consumers and firms may have significant effects on the economy in terms of employment, inflation, foreign trade, and economic growth. For example, to what extent do rising energy prices, brought on by taxes, cause firms to reduce production and lay off workers? To what extent do rising energy prices add to overall inflationary pressures, or are they offset by price declines

elsewhere in the economy? Also, questions have been raised about the effects of energy prices on income distribution. Interest has focused largely on two levels--the interpersonal and the regional level. At the interpersonal level, concern has been expressed that rising prices have hurt lower-income groups, perhaps more than proportionately to the burdens borne by those better off. At the regional level, there has been debate over policies designed to alleviate perceived inequities that arise because some regions (because of climate or other reasons) use energy more intensively than others while some regions that produce primary energy sources actually benefit from higher energy prices.

Such issues form the focal point for our interest in energy taxes. We are most interested in energy taxes to the extent that they affect decisions with respect to energy consumption, production, and imports and in the effects of energy taxes on income distribution, employment, inflation, and economic growth.

Effects on Energy Consumption and Production

We should begin by recognizing that as a general rule, taxes do not stay put. That is, when a tax is placed on some group of individuals or firms, the taxed individuals or firms most often change their behavior so that the actual burden of the tax is shifted wholly or in part to other individuals or firms. In some circumstances the tax is shifted forward in the form of a higher price for some produced commodity and the quantity purchased will be reduced. A tax may also be shifted backward: that is, the taxed firms may change their behavior in such a way that sellers of the commodities and services they purchase pay some of the tax.

The state severance tax on coal provides a good example of tax shifting and incidence and illustrates well the kinds of effects that taxes may have. Many coal-producing states have recently adopted or increased severance taxes on coal. (The most notable example is Montana, which has adopted a 30-percent tax on the value of coal at the mine mouth.) Some of the states have adopted the tax on the assumption that all of the tax will be "exported," that is, shifted forward, largely onto out-of-state consumers of electricity. However, to the extent that utility firms can obtain coal elsewhere at lower total costs, sales by firms in the taxing state will diminish. Further, at the higher tax-inclusive price for coal, alternative sources of energy, such as oil or gas, become more attractive and sales again are lost. Finally, with a higher price for electricity, consumers will use less electricity, and sales of coal will further diminish. The drop in sales will put fiscal pressure on firms producing coal in the states with severance taxes, and they will reduce output from existing mines and look for alternative mining locations in other coal-bearing states. This means that landowners (including the federal government) that have coal lands in the taxing states will probably have fewer firms bidding lower prices to lease coal land. These landowners will have borne part of the burden of the tax. Furthermore, the value of the mining firm will fall, thereby shifting some of the tax to the owners

of capital. In the long run, investors will leave the industry and firms will have less money to invest in new facilities. Finally, to the extent that workers (e.g., miners and construction workers) become unemployed or must accept lower-paying employment, they also will have borne a portion of the tax. Thus, the effects of a severance tax are quite complex, and some of the effects may be quite different from those expected by the jurisdiction imposing the tax.

It is important to underscore the impact of taxation on fuel substitution. First of all, there is a substitution decision that must take place at the energy conversion level--in the above case, electric generation. Often this is an investment decision and not one that can take effect immediately because boilers must be converted. (We should note here that any substitution to oil will likely lead to an increase in imports.) Second, a substitution decision takes place at the consumer level if the utility is allowed to pass through the increase in coal price caused by the tax increase. The consumer must decide on the substitution of heating oil, natural gas, or more home insulation for electricity, which may also lead to increased energy imports. In addition, since fuel substitution typically involves investment, changes in energy choices can also affect the overall rate of capital formation and its distribution by type and region.

Effects on Income Distribution

Energy taxes can affect the distribution of income among persons to the extent that prices are increased as a result of the taxes, incomes are altered as a result of changes in the production decisions of firms, and other taxes are raised or lowered. The effects of changes in prices of energy products on the distribution of income can be discerned through budget studies that indicate energy purchases by income groups. For intermediate energy products--those used to produce other goods and services--the final impact on incomes by income class is more difficult to determine. On the income side, the determination of the relative impact of energy taxes on returns to labor and property by income class is even more difficult to sort through. For example, a tax that indirectly changes profits will lead to changes in tax revenues that are derived directly from profits, which means that taxpayers are affected along with stock owners; or, if some stock is owned by pension funds, lower after-tax profits may make low-income retired persons worse off. Moreover, once one change occurs in the economy, further adjustments are induced elsewhere, and final outcomes will depend on what other changes occur. Again, then, simple intuition and observable direct effects may be a poor guide to the effects of energy taxation.

The second aspect of the income distribution issue, the interregional impact of energy taxes on income, has several features. First of all, different states impose a variety of taxes at a variety of rates on energy sources; the effect of each depends in part on the constellation of other taxes. For example, the extent to which such taxes are exported to other regions depends in part on the level of taxes on

competing fuels. Thus there is an effect--but one difficult to determine--from state and local energy taxes on the interregional distribution of income. Federal energy taxes are also likely to have interregional redistributive effects. Since regional energy consumption patterns are different (due to such factors as weather, industry location, and population density), to the extent that energy taxes result in higher energy prices, interregional income distributions are altered. Furthermore, energy production locations vary considerably between regions, and to the extent that income receipts coincide with energy production and are altered as a result of the taxes, interregional incomes are also changed. It is quite clear that with many taxing jurisdictions and the potential for interregional income redistributions, frictions can be expected to arise between taxing jurisdictions.

Effects on Inflation, Employment, and Economic Growth

Energy taxes may be a contributing factor in affecting the rate of inflation and unemployment in the short run and the rate of growth in the long run. If substitution for a newly taxed energy source is impossible or difficult in the short run and there are no direct price reductions in other sectors to offset increased energy prices, the overall price level may increase. This conclusion depends, of course, on what is done with the revenues; if they replace other taxes that also influence the Consumer Price Index, it is possible that no effects on measured inflation will occur.

Increases in energy taxes may reduce production in some sectors and lead to at least short-run unemployment until there are adjustments elsewhere in the economy. Alternatively, a change in taxes may induce shifts toward more labor-intensive production methods and have the short-term effect of reducing unemployment, again until adjustments elsewhere in the economy occur that bring the employment rate back to the levels determined by overall economic activity. To understand these effects requires an analysis of the role of energy use in growth, and there is no simple answer as to whether energy use has more or less effect than other inputs. Furthermore, different energy taxes have very different effects, as we have noted, and those effects must be specified. Finally, the use of energy tax revenues may be such as to encourage or discourage growth in comparison to leaving energy untaxed, and these effects must be specified and then sorted out before any conclusion can be drawn.

In summary, energy taxation can have a number of important effects on consumers, income recipients, regions, price levels, employment levels, and economic growth. It can alter the level of oil imports and improve or weaken the ability of the United States to carry on a foreign policy independent of energy concerns. But no generalizations are possible about all taxes, and the effects of specific tax measures can only be determined after careful analysis. The effects of taxes turn out not to be what they seem, and tax measures, if not carefully analyzed, may yield results contrary to the results desired by the people who impose them.

TAXONOMY AND ANALYTICAL QUESTIONS

The great diversity in type, effect, and jurisdiction of energy taxes is complex and can be best illustrated with a taxonomy specified by stage of production and taxing jurisdiction. A taxonomy also provides a mechanism by which tax questions deserving analytical attention can be identified. The issues identified here are those that the Committee thinks need to be more thoroughly understood in order to assess the impact of energy taxes on energy markets. The specific issues that each tax should address include: production, consumption, substitution among energy sources and between energy and other goods and services, rate of capital formation in the industry, regional and interpersonal income distribution effects, rate of exploration, and imports. Of course, not all of these areas are relevant for inclusion in the analysis of any specific tax.

While most of these issues can be addressed through use of more or less traditional economic methodology, it is important to recognize that a more behavioral approach is required to gain insight into some of them, for several reasons. First, the impact of a particular energy tax on a decision in an energy market depends on many factors, including other energy taxes and energy regulations that also impinge on the simplifying routines--psychological and organizational--used by a person or firm to make energy decisions. Second, a behavioral approach will advance scientific understanding of the impact of energy taxes by supplementing assumptions of economic theory. Finally, systematic and detailed analyses of cases are an effective way of illuminating the complexity of a subject; they provide a realistic basis for interpreting more aggregate and conventional studies.

Table 1 presents a taxonomy of energy taxes in the United States. The taxonomy is based on the following definition of the energy industry: the exploration, development, and extraction of coal, oil and gas, uranium, oil-bearing shale, solar, hydro, and geothermal energy; the transportation of primary energy sources; the refining and processing of primary energy sources; transportation of refined and processed energy sources; the conversion of refined energy sources to useful energy; and the transportation and distribution of energy to final use. (A more detailed review of taxes can be found in Appendices A and B.)

From all the taxes and tax-related issues, the Committee has concluded that several are among the most important; they are discussed in the rest of this report.

Primary Energy Sources

Major Taxes

At the federal level, the extractive energy industries have several special income tax benefits. These include: a percentage depletion allowance for certain primary energy resources; expensing of

TABLE 1 A Summary of Energy Taxes in the United States

Type of Tax	Subject of Tax		
	Exploration, Development, and Extraction	Transportation, Conversion, and Distribution	Use and Conservation
<i>Federal</i>			
Production	<p>The federal coal excise tax is 25¢ per ton on surface-mined coal and 50¢ per ton on coal from underground mines.</p> <p>There is a reclamation tax of 15¢ per ton on underground coal, 35¢ per ton on surface-mined coal, and 10¢ per ton on lignite.</p>		
Income	<p>Percentage depletion allowance is 10% for coal and natural gas from geopressured brine, 15% for oil shale and geothermal deposits, and 22% for uranium. A 22% allowance for oil and natural gas is available to independent producers (who may claim the deduction only on the first 1,200 barrels of oil or 7.2 million cubic feet of gas produced per day) and for regulated natural gas. Energy-producing firms eligible for percentage depletion may choose either a cost or a percentage depletion.</p> <p>Intangible exploration costs may be written off immediately or recaptured by cost depletion.</p> <p>Gains from the sale of depreciable assets (attributable to the use of accelerated depreciation), excess percentage depletion or the deduction of intangibles, and gains from the deduction of exploration costs are taxed as ordinary income instead of as capital gains.</p> <p>Unlike other multinational firms, oil and gas producers may not consolidate their income with income from other foreign business enterprises for the purposes of a foreign tax credit. Also, they</p>	<p>Non-investor-owned utilities are exempt from income taxes and some of them are able to use tax-exempt municipal bond financing. Tax-exempt industrial development bonds are available to provide facilities for furnishing local electricity.</p>	<p>An income tax credit of up to \$300 is available for installing residential energy-saving equipment. There is another tax credit of up to \$2,200 for installing solar, wind, or geothermal equipment in the home.</p> <p>Some business expenditures for energy conservation are eligible for the regular investment tax credit. A special 10% investment tax credit is available for investment in "energy property," which is equipment that uses alternative energy sources or is designed to reduce energy consumption.</p>

are limited on the amount of excess taxes that can be carried back or over to 2% of taxable income in excess of the 46% foreign tax limitation.

Energy industries are subject to a 15% minimum tax on items receiving preferential tax treatment.

Excise and Related

The excise tax on petroleum products is 4¢ per gallon on aviation fuel, gasoline, special motor fuel, and fuel used in waterway transportation and 6¢ per gallon on lubricating oil.

The manufacturer's excise tax on motor vehicles is 10% for bodies and chassis and 8% on parts and accessories.

A tax of 10¢ per pound is imposed on inner tubes and the sale of new laminated tires for highway use. The tax is 5¢ per pound on nonlaminated tires, and a tax of 1¢ per pound is imposed on tires made from recycled rubber. A tax of \$3 per 1,000 pounds of gross weight applies to highway vehicles in excess of 26,000 pounds.

Civilian aircraft are taxed at the rate of \$25 annually plus 2¢ per pound for non-turbine and 3.5¢ per pound for turbine-engined craft in excess of 2,500 pounds of maximum certified weight.

A tax of 8% is imposed on fares for domestic commercial air transportation, 5% on air freight, and \$3 per head on international air travel.

Beginning in 1980, a gas guzzler tax will be placed on the sale of new cars with high fuel consumption.

State and Local Production

Fifteen states tax coal production: specific taxes range from 2¢ to 65¢ per ton; ad valorem taxes range from 4.5% of gross value to 30% of FOB mine price. Also, several states tax production at the local level on the basis of value (net or gross) times local mill levy.

Twenty-five states tax oil and/or gas production: for oil, specific taxes range from .5¢ to 47.9¢ per

TABLE 1 (continued)

Type of Tax	Subject of Tax		
	Exploration, Development, and Extraction	Transportation, Conversion, and Distribution	Use and Conservation
	<p>barrel; ad valorem taxes range from .5% to 12.5% of gross value. For gas, specific taxes range from .5¢ to 7¢ per 1,000 cubic feet; ad valorem taxes range from 2% to 10% of gross value.</p> <p>Five states tax uranium production: taxes range from 1% to 5% of gross value with a maximum of \$3.292 per pound.</p> <p>Four states impose taxes on oil shale production: taxes range from 2% to 6% of gross value.</p>		
Excise	<p>Six states levy excise taxes on coal at specific percentages ranging from 2.5% to 4.75% of gross receipts; coal used as intermediate good in-state is exempt in two states.</p>	<p>Thirty-four states levy excise taxes on both non-investor-owned and private utilities ranging from .025% to 6% of gross receipts. Four states levy excise taxes on pipeline companies ranging from 1% to 6% of gross receipts. One state levies an excise tax on coal users (primarily electric utilities) of 15¢ to 40¢ per ton.</p>	<p>Most states (and some local governments at local option) levy excise taxes on electric and gas utility sales. Six states levy taxes on the sale of electrical energy per kilowatt hour ranging from .01¢ to .4¢.</p> <p>All states levy an excise tax on motor fuel ranging from 6¢ to 13.5¢ per gallon. Rates for diesel fuel are different from those for gasoline in 13 states.</p> <p>Some states levy excise taxes on a variety of petroleum products such as aviation fuels, kerosene, liquid propane gas, tractor fuels, and lubricating oils.</p>
Property	<p>Two states tax coal at the local level on the basis of a percentage of the current value of minerals in the ground times local mill levy. One state imposes a tax on unmined coal of .1¢ per \$100 valuation.</p>	<p>State and local property taxes on utilities are generally higher than those on other types of enterprises because utility property is entered on tax rolls at a higher fraction of market value than other types of enterprises in many states.</p>	<p>Property tax benefits are available in 19 states on equipment associated with the use of alternative energy sources. The benefits take the form of preferential assessment, tax exemption of the equipment, special valuation of realty using solar equipment, and reimbursements of property taxes on buildings using solar equipment.</p>
Income	<p>States that base income tax on federal tax laws permit, de facto, the depletion and current expensing benefits allowed at the federal level.</p>	<p>Non-investor-owned utilities are exempt from state income taxes.</p>	<p>Nine states provide state income tax benefits for the installation of equipment using alternative sources of energy. The benefits take the form of</p>

Some states allow depletion or current expensing.

tax credits, accelerated depreciation, and tax deduction.

Miscellaneous Various nominal taxes are imposed to finance conservation and regulating activities, e.g., drilling permits and inspection fees.

Fourteen states impose fuel inspection fees. The rates for gasoline and diesel fuel range from .5¢ per 50 gallons to 1.5¢ per gallon.

SOURCE: Adapted from Morgan, W. E. and Olson, D. O. The Structure of U.S. Energy Taxes—Federal, State, and Local. Unpublished paper prepared for the Steering Committee on the Impact of Taxation on Energy Markets, National Research Council, 1979.

intangible drilling expenses for oil and gas; special provisions that permit the current write-off of exploration and development costs for hard minerals (including coal); special treatment of foreign tax credits (oil and gas); and special treatment of capital gains. Excise taxes are imposed on coal for purposes of land reclamation and for compensation of miners afflicted with mine-related health problems. Surface and underground mines pay differential per ton rates, which are placed in two funds: the Abandoned Mine Reclamation Fund, which is used to restore land and water resources; and a fund created by the Black Lung Benefits Revenue Act that is used to compensate miners who have incurred occupationally related lung diseases (see Table 1 and Appendix A).

State (and in some cases local) governments impose many different taxes on primary energy sources: production taxes at the wellhead or mine mouth on the physical amount (specific production tax) or value (ad valorem production tax) of the mineral extracted; excise taxes on the sale of primary energy sources; state property taxes on coal or, in some cases, a local production tax that is used in lieu of property taxes; depletion allowances and current expensing for exploration; and state income taxes that are based on the federal income tax paid and therefore provide the federal income tax benefits (see Table 1 and Appendix B).

Major Analytical Issues

Health and Environmental Taxes. What are the effects of federal health and environmental levies on investment and extraction decisions in coal mining? What will be the incidence of these taxes? Given that the proceeds of the federal health levy are paid into an earmarked fund, will this affect the expected wages of coal miners? Is this tax an effective means of preventing black lung disease? Is the environmental levy an effective means of encouraging reclamation?

Taxes on Primary Energy Production. What are the effects of state and local severance and property taxes on investment in and production of primary energy sources (oil, gas, coal, and uranium)? What are the implications for interfuel substitution of state and local taxes on primary energy resources (oil, gas, coal, and uranium)?

There are a great variety of different state and local severance and property taxes that vary by both tax jurisdiction and primary energy source. In general, national energy aims involve the development of alternative technologies that will allow long-run substitution of other energy types for oil and gas. The principal objective is to reduce the relative dependence upon imported oil. An important component of this strategy is increased reliance on coal and uranium. This is in direct contradiction to the aim of state and local taxing jurisdictions, which appears to be to maximize the tax revenue from primary energy sources. These taxes may affect returns to primary energy development and production at both the operating and exploration margins. (The scope of the authority of state and local jurisdictions to impose what may be preemptive taxes on primary energy sources is now being reviewed by the federal courts and the federal executive and

legislative process. It will be useful to review and integrate the legal and economic issues--regardless of whether the specific cases now in the courts have been resolved on appeal.)

Percentage Depletion Allowances. What are the effects of the percentage depletion allowance on the coal, uranium, and geothermal industries? What are the recent tax expenditures, through percentage depletion, for each source?

The Foreign Tax Credit. National energy economies are interconnected through the world energy market. Oil, coal, natural gas, and uranium move in international trade. A large portion of the discovery, production, and transportation of primary energy sources in international trade is undertaken by private transnational corporations subject to various tax regimes.

In order to evaluate the prospective role of foreign tax credits for U.S. transnational energy companies; it is necessary to include a review and comparison of international foreign tax credit provisions. Such a review should also discuss the likely prospective effects of possible changes in the U.S. treatment of the foreign tax credit. Topics to be addressed include:

the history of the U.S. foreign tax credit with special reference to the treatment of royalties paid to foreign governments as if they were taxes;

current legal and legislative issues regarding the level and application of the U.S. foreign tax credit;

non-U.S. tax treatment of foreign energy activity income for non-U.S. firms;

the effect of the changes in the organization of the world oil and energy markets on the financial significance of foreign tax credits, e.g., the impact of exporter countries assuming ownership of production companies and converting the role of the transnational companies to "service" functions; and

prospective effects of potential alternative modifications of the U.S. foreign tax credit upon the participation of U.S. transnational energy firms in non-U.S. energy activities.

Taxes and Enhanced (Tertiary) Oil Recovery. Enhanced, or tertiary, oil recovery (EOR) involves the application of various technologies, such as CO₂ injection, surfactant injection, or steam flooding of oil reservoirs, in order to increase the fraction of original oil that is recovered by production. Enhanced oil recovery is a more intensive operation of a reservoir than relying upon natural reservoir pressure

or standard secondary recovery techniques such as water flooding or pressure maintenance through reinjection of associated gas. Expenditures for EOR operations must be either expensed or capitalized for tax purposes. There are a number of questions involved in the tax treatment of expenditures for enhanced oil recovery.

What are the current provisions of the U.S. Tax Code that apply to EOR?

How are these provisions of the code interpreted by the Internal Revenue Service in the tax regulations?

How do these code provisions and regulatory interpretations for EOR compare with provisions and interpretations for other minerals and other economic activities that are analogous to EOR?

What impact upon the rate of adoption and investment in EOR applications and the supply of domestic oil would result from alternative tax treatments of expenditures for EOR?

Energy Transportation, Conversion, and Distribution

Major Taxes

Non-investor-owned utilities are exempt from federal income taxation. They also benefit indirectly from tax-exempt municipal bond financing; beginning in 1981, the investment tax credit for utilities will be less than that allowed for other types of business enterprise (see Table 1 and Appendix A).

Many state and local governments impose differentially higher property taxes on utilities; non-investor-owned utilities are exempt from state income taxes. The regulatory policies of the state differ as to normalization of the utility's taxes for rate-making purposes; the majority of states impose a special public utility gross receipts tax, and several states impose special franchise taxes on pipeline companies (see Table 1 and Appendix B).

Major Analytical Issues

Special Tax Treatment of Utilities. To what extent, if any, have lower tax costs on non-investor-owned public utilities (including lower interest costs related to tax exemption) influenced investment, pricing, and production decisions? Given the current levels of taxation and existing regulatory procedures, what are the investment implications for investor-owned utilities?

Energy Use

Major Taxes

The federal government imposes excise taxes on many petroleum products: aviation fuel, diesel fuel, gasoline, special motor fuel, non-commercial aviation uses of fuel, any liquid used as a fuel in a vessel engaged in commercial inland waterway transportation (with graduated rates increasing through 1985); and lubricating oil not used for motor vehicles. The portion of taxes on gasoline, diesel fuel, and special motor fuel attributable to highway users is earmarked for the Highway Trust Fund. (It should be noted here that the federal government imposes taxes on a number of commodities associated with energy use: examples are the excise tax on new motor vehicle chassis and bodies and the "gas guzzler tax" that will become effective in 1980 (see Table 1 and Appendix B)).

Some states impose taxes on the sales of electricity and natural gas; all states impose taxes on the sale of gasoline, and all but two states impose an excise tax on the sale of diesel fuel. In addition, some states impose special excise taxes on various petroleum products (see Table 1 and Appendix B).

Major Analytical Issues

Transportation Excise Taxes. What are the effects for fuel consumption of the federal and state excise taxes on gasoline? What are the specific impacts on the airline and trucking industries of excise taxes on fuels? What are the implications of the earmarking of transportation excise taxes on energy consumption? What are the long-run implications of changing specific excise taxes to ad valorem taxes given the expected changes in prices?

Industrial Fuel Taxes. What effects do excise taxes have on industrial fuel choice?

Energy Conservation

Major Taxes

The federal government provides two tax credits designed to induce homeowners to use less fuel or install alternative energy sources. There is an income tax credit for installing energy-saving equipment, such as insulation, and there is an additional tax credit for the installation of solar, wind, or geothermal equipment. Businesses that invest in equipment that uses alternative energy sources are eligible for a special tax credit in lieu of the regular tax credit; a special tax credit is also available for installation of energy conservation equipment. Many states provide incentives, primarily through income

tax credits and preferential property tax treatment, for the installation of equipment using alternative energy sources (see Table 1 and Appendices A and B).

Major Analytical Issues

Tax Credits. What impacts have tax credits for energy conservation had on the conservation of non-renewable energy resources? To what extent have tax credits affected the demand for energy-saving equipment? What have been the roles of other factors--including market structure, attitudes, and information--in influencing such decisions? The discussion of these questions should include the following information if possible:

the number of taxpayers who are eligible for these credits; the number who actually claimed the credits;

the aggregate dollar amounts claimed under the credits;

the distribution of tax credits by income class and by region of both taxpayer and beneficiaries and by dollar amounts.

Other Analytical and Research Questions

Several research questions considered important by the Committee do not fit under the headings defined in the taxonomy. In some cases the research questions cut across the partitions found in the taxonomy. Other research questions set out below relate to taxes that have not yet been enacted but currently are being discussed and would have significant implications for energy production and consumption in the United States.

Cross-cutting Issues

Energy Taxes and Energy Models. How can the methodology of public finance analysis be incorporated into energy models? In particular, how should taxes be incorporated into energy models? Effective tax rates may change in response to tax and other policy measures: is there a way to make effective rates endogenous to the models? (The discussion of this issue should include general tax incidence methodology, which would cover a broad range of taxes.)

Energy Taxation and Industrial Structure. What effect does the energy industrial structure have on tax incidence? What effect do taxes have on industrial structure and on other aspects of the operation of energy markets?

Energy Taxes and Economic Growth. What is the impact of energy taxes on unemployment, inflation, and economic growth?

Energy Taxes and Income Distribution. What impact have energy taxes had on the distribution of income and on regional income distribution? (Special attention should be given to methodological and data issues associated with these topics.)

Energy Taxation and Fuel Substitution. What are the interrelationship and combined effects of all major energy taxes on such factors as fuel substitution, investment, and relative energy prices?

Energy Taxes and Alternative Policy Instruments. What are the relationships between taxes and direct restrictions, such as quotas and rations, and between tax credits and direct subsidies?

Possible New Taxes

Lessons from Comparative Experience. Since 1976, both Norway and Britain have imposed windfall profits taxes on oil. Canada is now considering the same type of tax. The administrative problems of such excess profits taxes are well known. The implications of such taxes for firms' behavior are less well known. Even if the President's April 1979 windfall tax proposal is not enacted this year, pressures for excess profits taxation on oil will doubtless continue. In considering windfall oil taxes, the United States may benefit from a careful examination of the Norwegian and British experiences since 1976.

What have been the major administrative problems encountered in Norway and Britain by their windfall oil taxes? What steps have been taken to remedy those problems? What problems seem intractable?

In what ways have the taxes affected investment and production behavior in the North Sea?

What are the implications of the Norwegian and British experiences with windfall profits taxes for the design and implementation of possible U.S. windfall taxes?

In addition to the international comparison of the windfall tax issue, an international comparison of other major taxes, including taxes that are now in place as well as those that are not, would be useful in understanding U.S. energy taxes in a broader context and could indicate likely consequences of adopting new taxes.

Integration of Corporate and Personal Income Taxes. Little work has been done on the implications of integration of personal and corporate taxes for the energy industry, particularly petroleum. The impact of full or partial integration on energy firms will depend critically upon several factors: chief among them are the treatment of tax preferences, such as percentage depletion, and the treatment of foreign source income.

Will current moves toward integration have differential impacts on the energy industry, compared with other industries?

What would be the impact on energy firms of integration schemes that do not allow "pass-through" of tax preferences?

Are the individual payout and debt-equity ratios of energy firms typically such that we would expect differential impact (plus or minus) on the energy industry or among firms within the industry?

Revenue, Output, and Growth Effects of Windfall Oil Taxes:

Interaction Between the Primary Energy Sector and the Economy. One aspect of the policies associated with phased decontrol of domestic U.S. crude oil prices may be an "arbitrage tax," which would dampen the impact of increased world oil prices on U.S. producer revenues. Such a tax would drive a wedge between the world oil price (above a certain base level) and the price received by U.S. producers for U.S. production. The higher the world oil price above the base level, the greater the absolute amount of the tax and the larger the wedge. In the event of higher world oil prices and the triggering of such a tax, would there be lower production of U.S. crude oil than would otherwise be the case, and greater dependence on imported oil? What effects would the implementation of an "arbitrage tax" have on U.S. wellhead oil prices net of tax, long-run U.S. oil output, government tax receipts, the volume of oil imports, and the volume and productivity of capital expenditures?

CONCLUSION

This report presents a taxonomy of the major differential federal, state, and local taxes on energy in the United States. The taxonomy is constructed on the basis of the initial point of introduction of energy taxes. The stages of production and energy use include primary energy production, transportation, refining, generation, distribution, use, and conservation. However, as our initial remarks indicated, taxes usually do not stay put and the final incidence of energy taxes may be quite different from the points of introduction.

The report has also identified major analytical questions that need to be addressed by the Department of Energy in its analysis of

energy taxes. Some of the analytical questions are formulated on the basis of the taxonomy. Others, which cut across the defined stages of production and use, are presented separately. In addition, the Committee has recommended the investigation of some taxes that have not yet been adopted, but, if imposed, could have significant effects on energy production and consumption in the United States.

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APPENDIX A: FEATURES OF FEDERAL ENERGY TAXES

TAXES ON COAL PRODUCTION

There are two types of federal production taxes that are imposed only on the coal industry. The federal coal excise tax (Internal Revenue Code [IRC], Sec. 4121) is placed on the sale of coal by the producer. The tax rate is 50 cents per ton on coal from underground mines and 25 cents per ton on coal from surface mines. This tax does not apply to lignite and it may not exceed 2 percent of the price at which coal is sold by the producer. The tax proceeds go to a fund, as specified by the Black Lung Benefits Revenue Act of 1977 (P.L. 95-227), and are used to compensate coal miners who have incurred mining-related lung diseases.

The Surface Mining Control and Reclamation Act of 1977 (P.L. 95-87) requires that land be rehabilitated to conditions that existed prior to coal mining. It imposes a reclamation tax on coal at the rate of 15 cents per ton or 10 percent of sale price (whichever is less) on underground coal and 35 cents per ton or 10 percent of the sale price (whichever is less) on surface-mined coal. The tax on lignite is 10 cents per ton or 2 percent of its sale price (whichever is less). The tax revenue is placed in the Abandoned Mine Reclamation Fund and used to restore land and water resources previously degraded by coal mining.

INCOME TAXES

The energy industries, with the exception of non-investor-owned utilities, pay federal income taxes, but there are many tax provisions that affect these taxes and apply specifically to these industries.

SOURCE: Morgan, W. E. and Olson, D. O. (1979) The Structure of U. S. Energy Taxes--Federal, State, and Local. Unpublished paper prepared for the Steering Committee on the Impact of Taxation on Energy Markets, National Research Council, Washington, D. C.

The Depletion Allowance

An important tax feature for the energy industries is the depletion allowance, which includes percentage depletion and cost depletion. The oil and gas industry is limited in most instances to the use of cost depletion, but businesses that are eligible for percentage depletion must take the greater of percentage or cost depletion in each year, and these firms remain eligible for either type of depletion in future years.

The percentage depletion allowance enables the taxpayer to deduct from taxable income a percentage of the gross value at the wellhead or minemouth of production of the non-renewable energy resources. This depletion allowance is calculated as a flat percentage of gross income (excluding rents and royalties) from the energy-producing property. Cost depletion is calculated by first determining the ratio of the oil or gas extracted to the estimated recoverable reserve of the well. This ratio is then applied to the capitalized cost or purchase price of the property, and the result deducted from the taxpayer's gross income. Cost depletion is available to all energy industries, including those producers who are not allowed to use percentage depletion.

Percentage depletion allowances for the mining industries (IRC, Sec. 613) are 10 percent for coal, 22 percent for uranium, and 15 percent for oil shale. For a geothermal deposit, which is defined as any reservoir of natural heat stored in rocks or in aqueous liquid or vapor, the depletion allowance is currently 22 percent, but is on a declining scale through 1984 when it will be 15 percent. The percentage depletion allowance for the mining industries may not exceed 50 percent of the net or taxable income from a piece of property computed without the allowance for depletion.

Percentage depletion has been denied to most oil and gas producers. For eligible producers (IRC, Sec. 613A), the depletion allowance is 22 percent for regulated natural gas and for natural gas sold under a fixed contract, 10 percent for qualified natural gas from geopressed brine, and 22 percent for independent oil and gas producers and royalty owners under a declining schedule until 1984 when the percentage depletion allowance will be 15 percent.

The depletion allowance for regulated natural gas and gas sold under a fixed contract has no maximum limitations. The depletion allowance for independent oil and gas producers may not exceed either 50 percent of net taxable income, computed without regard to percentage depletion, or 65 percent of a taxpayer's total taxable income, computed without regard to depletion, net operating loss carrybacks, and capital loss carrybacks--whichever is less. Also, the depletion allowance for independent producers and royalty owners applies only to average daily production that does not exceed 1,200 barrels of oil per day or 7.2 million cubic feet of gas per day. This maximum limitation will be reduced to 1,000 barrels of oil and 6 million cubic feet of gas per day in 1980. Percentage depletion is denied to (non-"independent") independent producers who refine crude oil or sell gasoline or oil through a retail outlet.

Deductions for Development Expenditures, Exploration Costs, and Intangible Drilling Costs

For the mining industries (coal, uranium, and oil shale), development expenditures may be deducted as incurred or prorated through cost depletion (IRC, Sec. 616). Domestic mining companies are permitted, as an option, to deduct the exploration costs of determining the existence, size, location, or quality of a mineral deposit as these costs are incurred. However, the year the mine comes into production these deducted expenditures must be either (a) included in taxable income for the year, with the depletable basis of the mine accordingly increased so that these expenditures may be recaptured through depletion, or (b) the taxpayer must forego the depletion allowance until deductions foregone equal deducted exploration expenditures (IRC, Sec. 617). Alternatively, exploration expenditures may be capitalized and amortized in relation to production. Payments made by the government to encourage mineral exploration and development for national defense purposes are not included in gross income from mining (IRC, Sec. 621).

The operator of an oil or gas well may deduct the intangible costs of drilling as they are incurred if he drills the well himself and supplies his own labor and machinery (IRC, Sec. 57, 263). Intangible costs, which include all drilling costs except depreciation on equipment, may also be recaptured through cost depletion, but the choice of deducting expenses or including them in the capitalized cost of the well is binding for all future years. Non-owner-operators of oil and gas wells must recover intangible drilling costs through cost depletion or as ordinary loss for non-productive wells.

Preferential Tax Considerations for the Utility Industry

Non-investor-owned utilities are exempt from income taxes, and some of them are able to take advantage of tax-exempt municipal bond financing. Also, tax-exempt treatment is provided for industrial development bonds used to provide facilities for local provision of electrical energy.

Utilities use the same depreciation and accelerated depreciation schedules that other businesses use, but for purposes of rate making, they may present a different depreciation schedule. The use of this different depreciation schedule for rate making may allow faster recovery of capital costs for public utilities than for other businesses.

Taxation of Capital Gains

A gain from the sale of certain depreciable property is taxed as ordinary income to the extent that the depreciation and amortization deducted exceed the amount that would have been deducted using straight-line depreciation (IRC, Sec. 1245). For the energy industries, this refers to any equipment or depreciable property used in the extraction,

production, or furnishing of transportation, communication, electrical energy, gas, or bulk storage of liquids and gasses. A gain on the sale of oil, gas, or geothermal property resulting from deducted depreciation and intangible drilling expenses in excess of the amount allowable using straight-line depreciation and cost depletion is taxable as ordinary income (IRC, Sec. 1254). Also, when mining property is sold, the lower of adjusted exploration expenditures deducted or the amount realized minus the adjusted basis of the property is treated as ordinary income instead of as a capital gain (IRC, Sec. 617).

Coal mined in the United States and held for more than a year before its disposal under a contract whereby the producer retains an economic interest in the coal qualifies as a sale of property used in trade or business (IRC, Sec. 1231). Approximately the difference between the amount realized on the sale less cost depletion and contract costs is taxed as a capital gain instead of as ordinary income. A taxpayer using this option may not claim the percentage depletion allowance.

Business Investment Tax Credits

The provisions of the business investment tax credit now treat utilities almost the same as other business enterprise. The investment tax credit (IRC, Sec. 46, 48) of 10 percent is available to businesses investing in certain depreciable property (IRC, Sec. 38), which includes tangible personal property and other tangible property used in the extraction, production, or furnishing of communications, transportation, electrical energy, gas, water, sewage disposal, or bulk storage of liquids and gasses. The Revenue Act of 1978 extended this credit to investment in buildings and in pollution control facilities that are amortized over a 5-year period.

Instead of the regular 10-percent credit, an 11-percent credit may be used if the extra 1 percent is contributed to an employee stock option plan. An additional investment tax credit of .5 percent is available if an amount equal to the .5-percent credit is contributed to the employee stock option plan by a firm's employees. There is a special credit for investment in energy property (discussed in the section on energy conservation).

The maximum investment credit available in any year on property not owned by a public utility is \$25,000 plus 60 percent of tax liability above \$25,000. The percentage limits on additional tax liabilities will be increased to 70 percent in 1980, 80 percent in 1981, and 90 percent in 1982 and thereafter. These percentage limits above 60 percent are subject to further limitation for public utility property (IRC, Sec. 46(a)(7)). For all types of business enterprise, there is a \$100,000 annual limitation on used property eligible for the investment tax credit.

Foreign Tax Credits

The foreign tax credit (IRC, Sec. 901-908) is an important tax exemption for all U.S. multinational firms. It is limited to 46 percent of a corporation's foreign earned income in any given year; however, excess taxes paid may be used as credits in the two preceding tax years and for up to five years following the current taxable year. This credit is available at the time income is earned for foreign branches of U.S. firms. Foreign subsidiaries are not usually taxed by the United States unless their income is returned to the United States in the form of dividends. Repatriated earnings are then taxable and eligible for the foreign tax credit (IRC, Sec. 902) or a deemed paid credit on taxes paid by the subsidiary. The foreign tax credit applies only to foreign taxes imposed on net income or on taxes imposed in lieu of income taxes.

Several provisions in the foreign tax credit treat the energy industries differently from other business enterprises. Percentage depletion is denied to foreign oil and gas operations, although percentage depletion may be used by foreign mineral operations (IRC, Sec. 613A). However, the amount of taxes deemed paid that is eligible for the foreign tax credit is reduced on a country-by-country basis by the amount by which percentage depletion exceeds the deductions that would have been made using cost depletion (IRC, Sec. 901(e)). All business enterprises must claim the foreign tax credit on an overall basis for all countries, but oil and gas income must be treated separately from all other types of income. Also, if oil and gas extraction taxes paid in a year exceed the 46-percent limitation, only that part of excess taxes not exceeding 2 percent of foreign oil and gas income may be used for carryover and carryback credit. Other types of businesses are not subject to this carryover and carryback limitation.

Energy and non-energy corporations that do business only in the western hemisphere and earn at least 95 percent of their gross income from foreign trade may qualify for the special tax deduction given western hemisphere trade corporations (IRC, Sec. 921, 922). Qualifying domestic corporations may deduct from their gross income in 1979 an amount equal to 2 percent of taxable income divided by the highest rate of corporate tax imposed on that corporation. This deduction will be eliminated in 1980.

Minimum Taxes

All taxpayers are subject to a minimum tax on a base of revenues subject to preferential tax treatment (IRC, Sec. 56, 57). This tax base includes the sum of the value of items such as intangible drilling costs and percentage depletion taken in excess of cost depletion, depreciation taken in excess of straight-line depletion, capital gains deductions, and some other tax deductions. A minimum tax of 15 percent is imposed on this base: for noncorporate taxpayers the tax is reduced

by either \$10,000 or one-half the regular income tax for the year, whichever is greater; for corporations the tax is reduced by either \$10,000 or the full amount of the regular income tax, whichever is greater.

Noncorporate taxpayers must pay an alternative minimum tax (as distinct from the regular minimum tax discussed above) to the extent that the alternative tax exceeds regular tax liability plus the regular minimum tax (IRC, Sec. 55). The alternative minimum taxable income is defined as gross income less all allowable deductions plus adjusted itemized deductions and capital gains deducted. This income is taxed at rates between 0 and 25 percent, depending on the amount of alternative minimum taxable income.

Consumption and Excise Taxes

The excise tax on petroleum products is imposed on the final sale of these products at the following rates:

4 cents per gallon on aviation fuel, special motor fuel, diesel fuel, and any liquid sold for use as fuel in a diesel-powered vehicle: to be reduced to 1.5 cents per gallon in 1985 (IRC, Sec. 4041).

7 cents per gallon on non-commercial aviation fuel: expires in 1980 (IRC, Sec. 4041).

4 cents per gallon on gasoline or any liquid sold to be used in a motor vehicle or motorboat: to be reduced to 1.5 cents in 1985 (IRC, Sec. 4081, 4041); this tax does not apply to gasohol that contains at least 10 percent alcohol.

4 cents per gallon, effective in 1980, on fuel used in commercial transportation on inland waterways under a schedule of increasing rates up to 10 cents per gallon in 1985 (IRC, Sec. 4042).

6 cents per gallon on the sale of lubricating oil (IRC, Sec. 4091).

The portion of the taxes on diesel fuel, special motor fuel, and gasoline attributable to highway users is earmarked for the Highway Trust Fund.

Another group of taxes is not imposed directly on energy, but on instruments of energy use, as follows:

10 percent on the value of the sale of new automobile truck and bus, truck, and tractor chassis and bodies (excluding light-duty trucks): to be reduced to 5 percent

in 1984 (IRC, Sec. 4061).

8 percent on the value of newly produced parts and accessories for the above motor vehicles, excluding light-duty trucks: to be reduced to 5 percent in 1984 (IRC, Sec. 4061).

10 cents per pound on sale of new tires for use on highway vehicles; 10 cents per pound on inner tubes to be reduced to 9 cents after October 1, 1979; 5 cents per pound on the sale of non-laminated tires and tread rubber: expiring after September 30, 1979; and a tax of 1 cent per pound on tires made from scrap rubber (IRC, Sec. 4071).

8 percent on fares paid for domestic commercial air transportation: to be reduced to 5 percent in 1980; 5 percent on air freight charges and \$3 per head on international travel: taxes expiring in 1980 (IRC, Sec. 4261-4263).

\$3.00 per year for each 1,000 pounds of taxable gross weight on highway vehicles in excess of 26,000 pounds (IRC, Sec. 4481).

\$25 per year plus either 3.5 cents per pound for turbine-engined aircraft or 2 cents per pound for other aircraft on maximum certifiable weight in excess of 2,500 pounds (IRC, Sec. 4491-4493).

The lump sum gas guzzler tax (IRC, Sec. 4064) will become effective in 1980 on the sale of new automobiles with high gas consumption. In 1980, the tax will be \$0 for automobiles with EPA ratings of 15 miles per gallon or better and up to \$550 for automobiles with ratings below 13 miles per gallon. In 1986 and thereafter, the tax rates will range from \$0 for cars with mileage of at least 22.5 miles per gallon and up to \$3,850 for cars with mileage ratings below 12.5 miles per gallon.

Taxes Related to Energy Conservation

The federal government provides tax incentives to homeowners and businesses for the purposes of energy conservation.

There is now an allowable income tax credit of 15 percent of the cost of installing energy-saving equipment in the home, up to a maximum credit of \$300 (IRC, Sec. 44C). This credit is not available for new construction but may be used for expenditures for insulation, new furnace burners, storm doors and windows, and weather stripping installed in existing structures. A second credit of 30 percent of expenditures up to \$2,000 plus 20 percent of additional expenditures

not exceeding \$10,000 for the cost of installing solar, wind, or geothermal equipment--up to a maximum credit of \$2,000--is also available. This credit is available for both existing buildings and new construction.

These residential tax credits may be claimed by either the homeowner or the renter, depending upon who makes the expenditures. However, these credits do not apply to a person's second home or vacation home. Apartment owners and renters are eligible for these credits, but only for the apartment they consider their primary residence. If these credits exceed an individual's tax bill, they may be applied to future taxes, but these credits may not be used for obtaining a tax refund.

Energy conservation incentives for businesses are available through the investment tax credit. Conservation expenditures on depreciable property may qualify for either the regular investment tax credit or for the special investment tax credit on energy property (IRC, Sec. 48). The investment credit for energy property is 10 percent and may be used to offset up to 100 percent of a taxpayer's tax liability; however, only \$100,000 of investment in used property is eligible for the special investment credit on energy property.

Property qualifying as energy property includes: boilers and burners using substances other than oil or natural gas; equipment to convert a substance other than oil or natural gas into fuel; geothermal energy equipment; shale oil equipment; solar and wind energy equipment; recycling equipment; equipment to produce gas from geopressured brine; and any equipment specially designed to reduce energy consumption. The regular investment credit, the investment credit on energy property, and the use of accelerated depreciation are denied to new boilers using oil or natural gas as fuel.

APPENDIX B:
TABULAR SUMMARY OF MAJOR STATE AND LOCAL ENERGY TAXES

SOURCE: Morgan, W. E. and Olson, D. O. (1979) The Structure of U.S. Energy Taxes--Federal, State and Local. Unpublished paper prepared for the Steering Committee on the Impact of Taxation on Energy Markets, National Research Council, Washington, D.C.

TABLE B-1

U.S. PRODUCTION OF PRIMARY ENERGY SOURCES

<u>Crude Oil, 1977¹</u>		<u>Natural Gas, 1976²</u>	
<u>State</u>	<u>Thousands of Barrels</u>	<u>State</u>	<u>Million Cubic Feet</u>
Texas	1,137,542	Texas	7,191,859
Louisiana	562,868	Louisiana	7,006,596
California	349,714	Oklahoma	1,726,513
Oklahoma	156,381	New Mexico	1,230,976
Alaska	168,994	Kansas	829,170
Wyoming	111,767	other states	1,967,324
New Mexico	87,085	TOTAL	19,952,438
other states	411,009		
TOTAL	2,985,360		

<u>Coal, 1977³</u>		<u>Uranium Concentrate, 1977</u>	
<u>State</u>	<u>Thousands of Short Tons</u>	<u>State</u>	<u>In Tons of U₃O₈</u>
Kentucky	142,945	New Mexico	6,780
West Virginia	95,405	Wyoming	4,990
Pennsylvania	83,225	other states	3,170
Illinois	53,880	TOTAL	14,940
Ohio	46,205		
Wyoming	44,500		
Virginia	37,850		
Montana	29,320		
Indiana	27,995		
other states	127,250		
TOTAL	688,575		

¹ Preliminary data

² Marketed production of natural gas. The data represent gross withdrawals less gas used for repressuring and quantities vented and flared.

³ Revised data.

SOURCES: Crude Oil: American Petroleum Institute, Basic Petroleum Data Book, Washington, D.C., July 1978; Natural gas: American Petroleum Institute. Basic Petroleum Data Book, Washington, D.C., April 1978; Coal: U.S. Department of Energy, Energy Data Reprints, February, 1979; Uranium: U.S. Department of Energy, Statistical Data of the Uranium Industry, GJO-100, Washington, D.C. USGPO, 1978.

TABLE B-2
STATE PRODUCTION TAXES ON COAL¹

<u>State</u>	<u>Production Tax Rate</u>
Alabama	33.5¢ per ton
Arkansas	2¢ per ton
Colorado ^{3,4}	60¢ per ton after first 8,000 tons of quarterly production
Florida	5% of gross value
Idaho	2% of net value
Kentucky ⁴	4.5% of gross value
Louisiana	10¢ per ton
Montana ²	The tax varies with the heating quality of the coal and is the greater of: 12-40¢ per ton or 20-30% of FOB mine price on surface mined coal; and 5-12¢ per ton or 3-4% of FOB mine price on underground coal.
New Mexico ^{2,3}	19.2¢ per ton on metallurgical coal plus surtax 40.5¢ per ton on steam coal plus surtax
North Dakota ³	65¢ per ton
Ohio	4¢ per ton
South Dakota	4.5% of taxable value
Tennessee	20¢ per ton
Utah	2% of gross value
Wyoming ^{2,3}	10.5% of gross value

¹Governmental units impose various nominal taxes to finance conservation and regulatory activities. These types of taxes are omitted from the table.

²Production taxes are also imposed at the local governmental level. In Arizona, production taxes are imposed at the local level but not at the state level.

³Six states impose excise taxes on the initial sale of coal--Arizona 2.5% of gross receipts, Colorado 3% of gross receipts (coal used for industrial purposes is exempt), New Mexico 4.75%, West Virginia 3.85%, Wyoming 3% (coal used for manufacturing is exempt) and North Dakota 2.5%.

⁴Three states impose property taxes on the value of unmined coal, Arizona, Colorado and Kentucky.

Source: Commerce Clearing House, Inc., State Tax Guide, Statute Summaries, By Taxes, By State, 1979.

TABLE B-3

STATE PRODUCTION TAXES ON OIL AND NATURAL GAS¹

<u>State</u>	<u>Production Tax Rates</u>
Alabama ²	6% of gross value
Alaska	12.25% of gross value for oil 10% of gross value for natural gas
Arkansas	5% of market value on oil wells producing 10 barrels or more per day; 4% plus .5¢ per barrel for other oil wells 3¢ per 1000 cubic feet of natural gas produced
California	Rate determined annually by the State Department of Conservation.
Colorado	2-5% of gross income, depending on total gross revenue.
Florida	8% of gross value for oil 5% of gross value for natural gas
Georgia	.5¢ per barrel of oil .5¢ per 1000 cubic feet of natural gas
Idaho	.5¢ per barrel of oil .5 mill per 1000 cubic feet of natural gas
Indiana	1% of gross value for oil
Kansas	nominal tax set by State Board of Health
Kentucky	.5% of market value for oil
Louisiana	12.5% of gross value for oil (less for small wells) 7¢ per 1000 cubic feet of natural gas
Michigan	2% of gross value
Mississippi	the greater of 6¢ per barrel or 6% of gross value for oil; the greater of 6% of gross value or 3 mills per cubic foot for natural gas.
Montana	2.1% of gross of first \$6,000 gross value and then 2.65% of gross value of oil 2.65% of gross value of natural gas
Nebraska	2% of gross-value
New Mexico	47.9¢ per barrel of oil 5.3¢ per 1000 cubic feet of natural gas
North Dakota	5% of gross value
Ohio	3¢ per barrel for oil 1¢ per 1000 cubic feet of natural gas
Oklahoma	7.085% of gross value for oil 7.085% of gross value for natural gas

TABLE B-3
(continued)

<u>State</u>	<u>Production Tax Rates</u>
South Dakota	3% of gross value
Tennessee	4.2¢ per 42 gallon barrel of oil 5% of sales price of natural gas
Texas	4.875¢ per barrel of oil 7.5% of market value of natural gas
Utah	2 % of gross value
Wyoming	4 % of gross value

¹Governmental units impose various nominal taxes to finance conservation and regulatory activities. These types of taxes are omitted from the table.

²Taxes on hydrocarbons have been omitted from the table. The tax rates on hydrocarbons are: 6% of gross value in Alabama; 2% of gross value in Nebraska; 4% of gross proceeds in Colorado; 2% of gross value in Utah. These taxes apply to the production of any hydrocarbon not taxable under the oil, gas, or coal severance taxes.

TABLE B-4

STATE PRODUCTION TAXES ON URANIUM
IN MAJOR PRODUCING STATES

<u>State</u>	<u>Production Tax Rates</u>
Arizona	2.5% of gross value
New Mexico	Based on value of uranium concentrate, maximum tax of \$3.292 per pound
Oklahoma	5% of gross value
Utah	1% of gross value
Wyoming	3.5% of gross value

TABLE B-5

STATE PRODUCTION TAXES ON OIL SHALE

<u>State</u>	<u>Production Tax Rates</u>
Alabama	6% of gross value
Colorado	4% of gross proceeds
Nebraska	2% of gross value
Utah	2% of gross value on production in excess of \$50,000

Source: Commerce Clearing House, Inc., State Tax Guide, Statute Summaries, By Taxes, By State, 1979.

TABLE B-6
NON NEUTRAL STATE INCOME TAX TREATMENT
OF THE EXTRACTIVE ENERGY INDUSTRY¹

<u>State</u>	<u>Income Tax Feature</u>
Alaska	Royalties can be deducted for oil and gas; current expensing of unsuccessful exploration for oil and gas; 10% depletion allowance for coal
Arizona	Some expensing of exploration costs for natural resources
Kansas	Accelerated deduction of oil production costs
Oklahoma	22% depletion allowance for oil and gas

¹States which base their income tax on the federal tax, de facto, provide the depletion and current expensing benefits available under U.S. income tax regulations.

Source: Commerce Clearing House, Inc., State Tax Guide, Statute Summaries, By Taxes, By State, 1979.

TABLE B-7

PUBLIC UTILITY GROSS RECEIPTS TAXES¹
(Percent of Gross Receipts Unless Otherwise Noted)

<u>State</u>	<u>All Types of Public Utilities</u>	<u>Electric</u>	<u>Gas</u>
Alabama		2.2	4 - 2 plus \$2,200
Arkansas	3		
Colorado	.2 of 1		
Connecticut	5		
Delaware	1 mill/ \$1 plus \$50		
Florida	\$1.50/\$100		
Georgia	Set Yearly		
Hawaii	≥ 5.885		
Illinois	5.08		
Indiana	.001		
Kentucky ²	≤ 1.5 mills		
Louisiana	2		
Maryland ²	2		
Massachusetts	≤.25 of .1 of 1		
Michigan	4		
Missouri	.25 of 1		
Nevada	2% of net profits plus 4 mill/\$1		
New Jersey	5		
New York	3		
North Carolina		6	6
North Dakota	Coal Gasification 2.5% or 10¢/1,000 cu. ft.		
Ohio ²	4		
Oklahoma	4		
Oregon	.25 of 1		
Pennsylvania	45 mills/\$1		
Rhode Island		4	3
South Carolina	1 mill/\$1 value property plus 3 mills/\$ gross receipts		

TABLE B-7
(continued)

<u>State</u>	<u>All Types of Public Utilities</u>	<u>Electric</u>	<u>Gas</u>
South Dakota	.001		
Tennessee	3		
Texas	.581 to 1		
Utah	.25 of 1		
Virginia	$\leq 2/10$ of 1		
Washington	$6/10$ of 1 to 3.6		
West Virginia ²	3.3		

¹In addition to the gross receipts tax, most states impose either an excise tax on the sale of electric power and gas, or include utility sales in the tax base of their general sales tax. Six states impose taxes on the sale of electrical energy per KWH: California, \$.0001, Idaho, \$.0005, Montana, \$.0002, New Mexico, \$.004, North Dakota, \$.00025, and South Carolina, \$.0005.

²Several states impose franchise taxes on pipeline companies: Louisiana 1% of gross receipts, Maryland 2%, Ohio 6% and West Virginia 3.3%.

Source: Commerce Clearing House, Inc., State Tax Guide, Statute Summaries, By Taxes, By State.

TABLE B-8
GASOLINE AND DIESEL FUEL EXCISE TAXES

<u>State</u>	<u>Cents Per Gallon</u> ¹	<u>State</u>	<u>Cents Per Gallon</u> ¹
Alabama	7(8)	Montana	8 (10)
Alaska	8	Nebraska	9.5
Arizona	8	Nevada	6
Arkansas	8.5 (9.5)	New Hampshire	10
California	7	New Jersey	8
Colorado	7	New Mexico	7
Connecticut	11	New York	8 (10)
Delaware	9	North Carolina	9
Florida	8	North Dakota	8
Georgia	7.5	Ohio	7
Hawaii	11.5-13.5 ²	Oklahoma	6.58 (6.5)
Idaho	9.5	Oregon	7
Illinois	7.5	Pennsylvania	9
Indiana	8	Rhode Island	10
Iowa	8.5 (10)	South Carolina	9
Kansas	8 (10)	South Dakota	8
Kentucky	9 ³	Tennessee	7 (8)
Louisiana	8	Texas	5 (6.5)
Maine	9	Utah	9
Maryland	9	Vermont	9 (0)
Massachusetts	8.5	Virginia	9
Michigan	11 (7)	Washington	11
Minnesota	9	West Virginia	10.5
Mississippi	9 (10)	Wisconsin	7
Missouri	7	Wyoming	8 (0)
		District of Columbia	10

¹ The number in parentheses denotes the tax on diesel fuel in those states which tax gasoline and diesel fuel at different rates.

² Rates are combined state and county rates.

³ A surtax of 2 cents per gallon of gasoline is levied on heavy equipment motor carriers.

Source: Commerce Clearing House, Inc., State Tax Guide, Statute Summaries, By Taxes, By State.

TABLE B-9

STATE AND LOCAL TAX INCENTIVES FOR INSTALLATION
OF EQUIPMENT USING ALTERNATIVE ENERGY SOURCES

<u>State</u>	<u>Types of Incentives</u>
Arizona	Income tax: amortization of solar energy used in business over a period of 36 months.
California	Income tax: tax credit in year of expense equal to 55% of cost for residences; similar for businesses with credit declining to 25% for businesses with credits in excess of \$12,000.
Colorado	Income tax: tax credit for solar installation equal to 55% of cost. Property tax: preferential tax assessment of solar heating.
Connecticut	Property tax: municipalities may exempt solar devices from property taxation.
Illinois	Property tax: special valuation for realty with solar equipment.
Indiana	Property tax: deduction for solar equipment.
Iowa	Property tax: solar energy systems are exempt.
Kansas	Income tax: solar equipment can be amortized in 5 years. Property tax: tax reimbursement for buildings equipped with solar energy systems, amounting to 35% of the tax paid on the building for each of 5 years following the solar installation.
Louisiana	Property tax: solar energy systems are exempt.
Maryland	Property tax: solar exemption.
Massachusetts	Property tax: 20 year exemption for solar devices.
Michigan	Property tax: exemption for solar devices.
Minnesota	Property tax: exemption for solar devices.
Montana	Income tax: public utilities are allowed some tax credit on loans to consumers for energy conservation.
Nevada	Property tax: tax allowances for solar and geothermal devices.
New Jersey	Property tax: solar exemption.
North Carolina	Income tax: solar tax credit of 25% of costs for corporations, tax credits of \$1,000 for individuals.

TABLE B-9
(continued)

<u>State</u>	<u>Types of Incentives</u>
North Dakota	Property tax: solar exemption and exemption for coal conversion facilities.
Ohio	Income tax: coal conversion facilities are exempt from the state income tax for 30 years. Property tax: exemption for energy conversion facilities.
South Dakota	Property tax: tax credit for renewable resource energy systems.
Tennessee	Property tax: solar exemption.
Vermont	Income tax: tax credit for use of alternative energy sources.
Virginia	Property tax: counties and municipalities can exempt solar equipment.
Washington	Property tax: solar exemption.
Wisconsin	Income tax: tax deduction for installation of alternative energy systems.

Source: Commerce Clearing House, Inc., State Tax Guide, Statute Summaries, By Taxes, By State, 1979.

APPENDIX C:
SELECTED BIBLIOGRAPHY ON ENERGY TAXATION

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