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July 21, 1993

MEMORANDUM FOR SECRETARY LLOYD BENTSEN
MACK McLARTY
BOB RUBIN
LAURA TYSON

FROM: JACK GIBBONS

SUBJECT: Energy Taxes and Economic Efficiency

I attach a set of charts Bill Hogan prepared for the Aspen Energy Policy Forum in which I recently participated. The graphical comparisons of international differences, the Clinton proposed taxes, and the estimated externalities are illuminating, and I thought that you would like to see this material. See especially pp. 5, 9, 11.

Forum participants (with broad representation from the energy industry, regulators, and academics), widely feel that the original BTU tax made sense. They were dismayed when the Administration backed away from the tax on coal, since this made the petroleum and gas industry see the result as entirely unfair and that intensified their response. One suggestion raised by several people: If the government wants a certain revenue stream from energy, form an independent commission akin to the Base-Closing Commission (and procedures) and let it work out some options.

It seems ever-more important to raise public awareness of the size of the externality costs in the U.S. energy system and the rationality of making price signals more fully reflect real costs. People can grasp the picture much more quickly and clearly when the information is put into graphics.

Attachment

cc: Greg Simon

Energy Taxes and Economic Efficiency

William W. Hogan
Kennedy School of Government
Harvard University

Aspen Energy Policy Forum
Aspen Institute

July 9, 1993

ENERGY TAXES

The defeated Clinton tax proposal might have served many objectives:

- Raise revenue.
- Internalize environmental costs.
- Support broader tax reform.

Clinton could not overcome the many constraints:

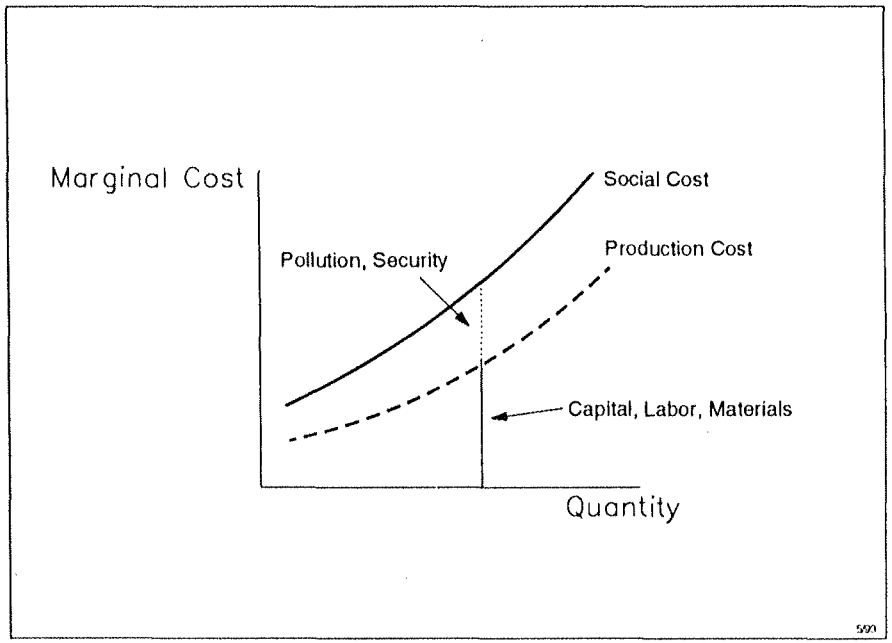
- Regional impacts dominate domestic politics.
- International competition raises appeals for industry exemptions.
- Macroeconomic adjustment costs raise specter of short-run job loss.

Focus here on the underlying analysis that might have been:

- Externalities.
- International price comparisons.
- Tax reform impacts.

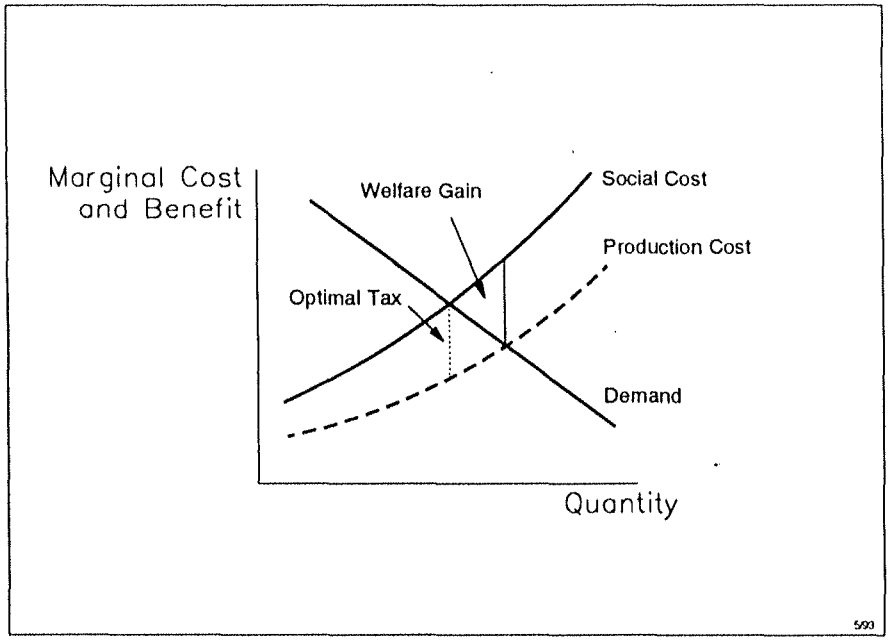
Externalities create a divergence between public and private costs.

- Private costs for capital, labor and materials are internalized in production decisions.
- Social costs arising from pollution, oil security, road wear do not affect production decisions .



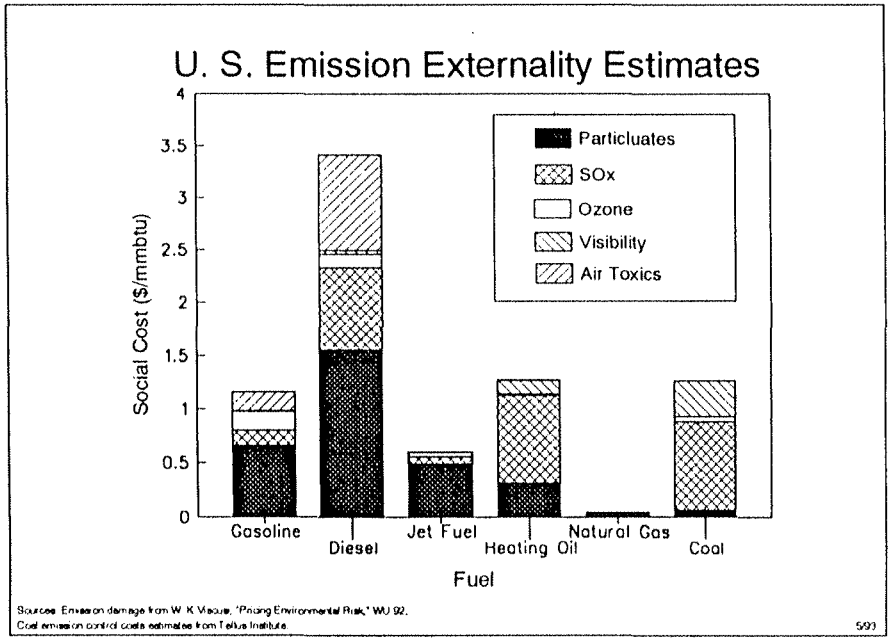
The theory of externalities looks to government to internalize social costs.

- Externality values and optimal tax can vary with quantity of consumption.
- Imposing the optimal tax ***increases*** welfare despite a reduction in conventional measures of GNP .



Local emissions create health and other social cost impacts.

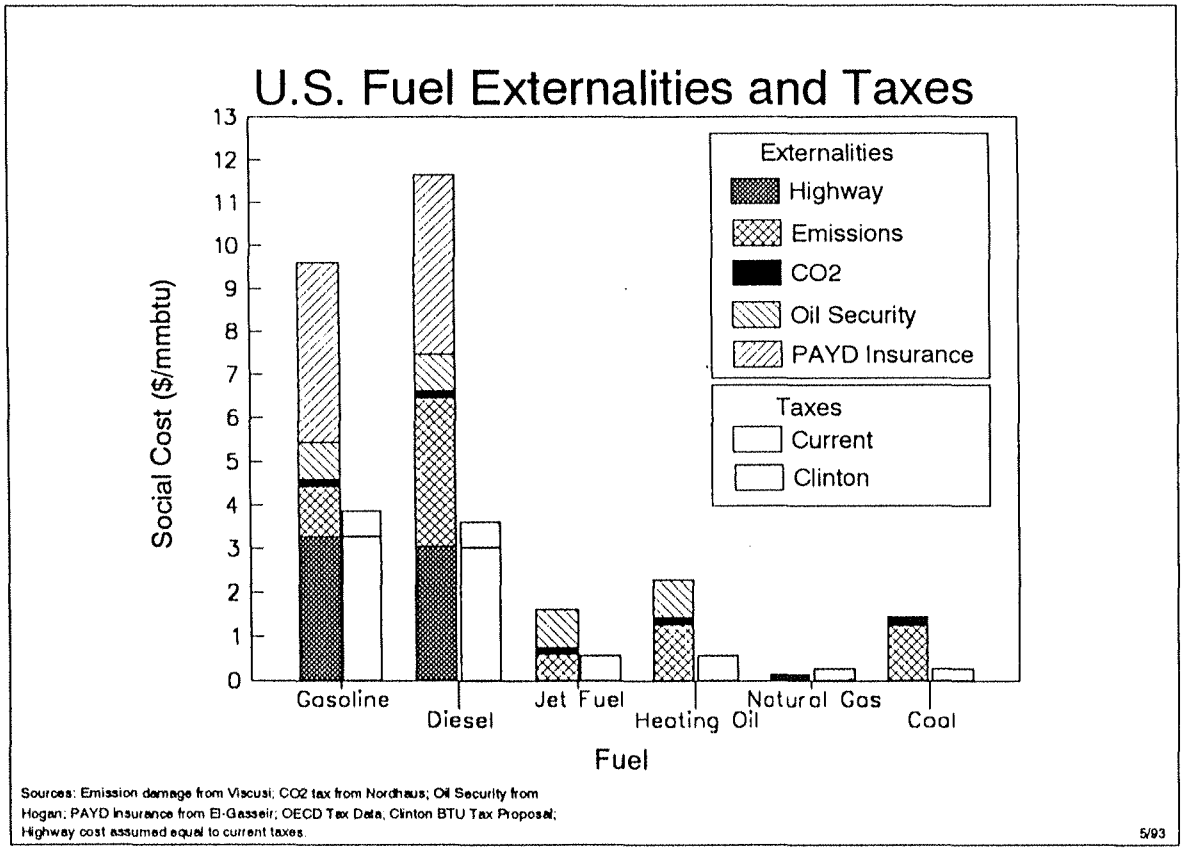
- Cost estimates include impacts of emissions and marginal cost of control.
- Comparison of the effective fuel tax is shown as either minimum of damage estimate or cost of control for coal. Diesel numbers might be lower with better estimates of control costs.



EXTERNALITIES

Total Costs and Taxes

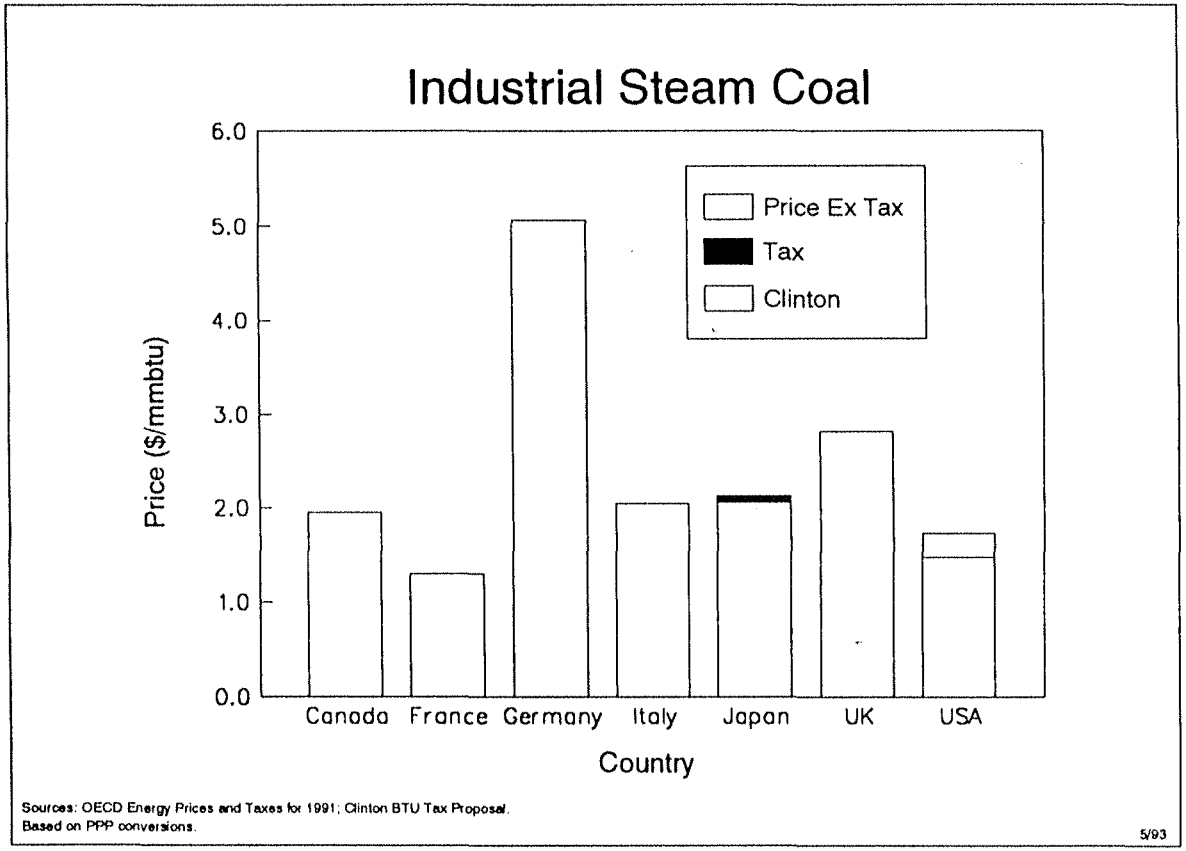
Security, global warming and other costs add to emissions impacts.



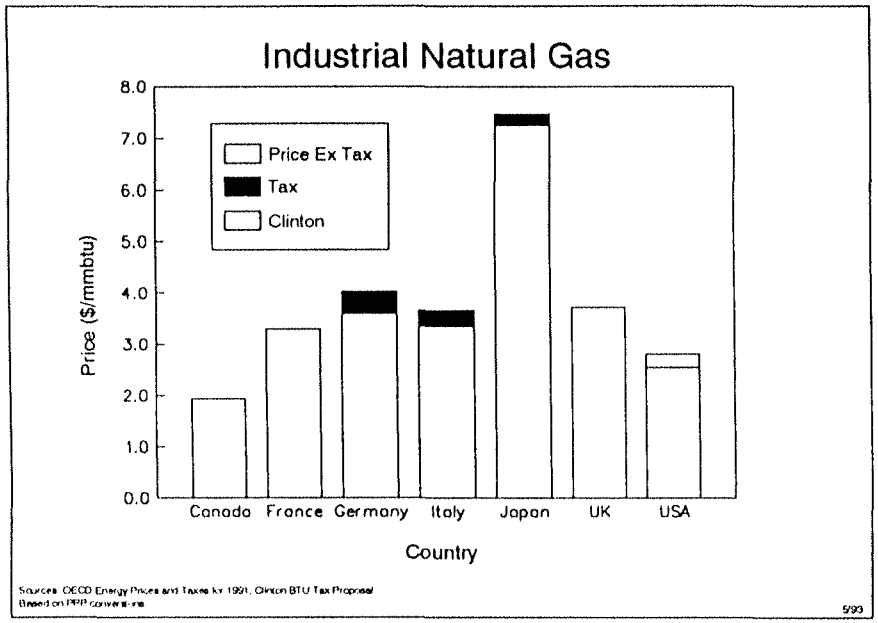
The focus on externalities puts the Clinton tax proposal in perspective:

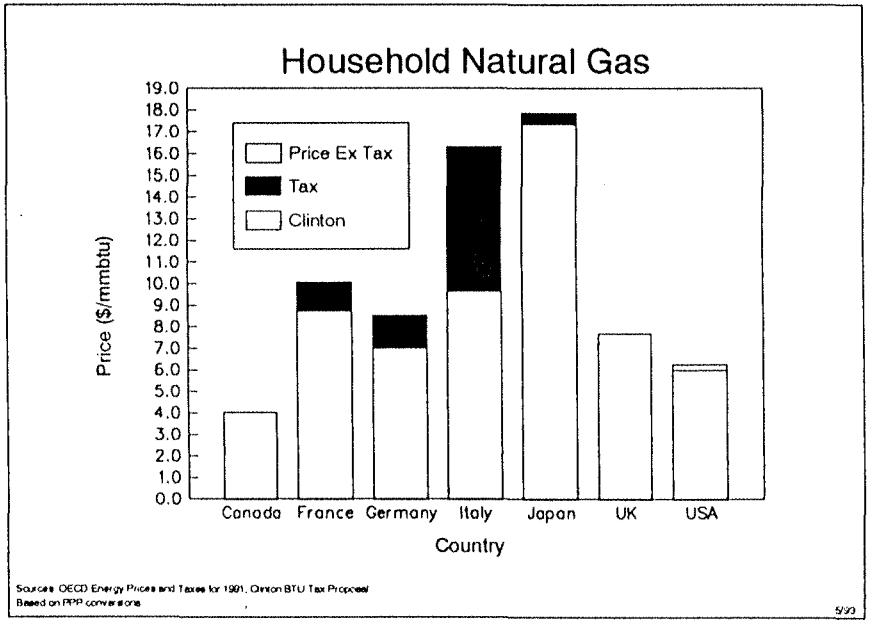
- Large social costs, especially for oil use.
- Coal effective tax dominated by assumption of scrubbing or other technologies to eliminate sulfur emissions.
- Global warming impacts are small compared to other effects.
- Natural gas is the only fuel considered here that looks over-taxed.
- For other fuels, Clinton proposal is modest compared to the social costs.
- Clinton tax proposal did not overburden energy, but target should be pollution not fuels. Incentives would be better through taxing pollution, with same revenue implications.

International comparison of coal prices shows little difference in taxes but substantial differences in prices.

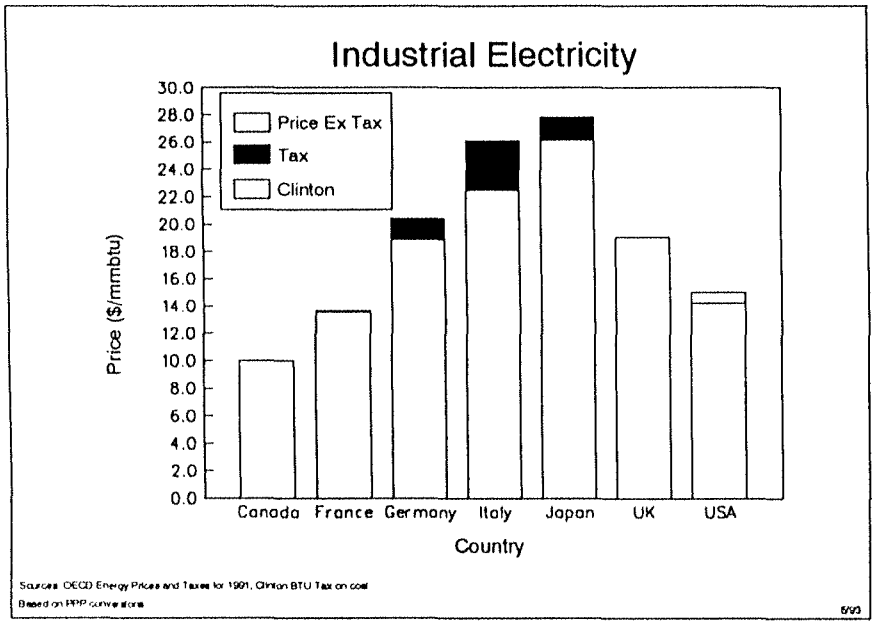


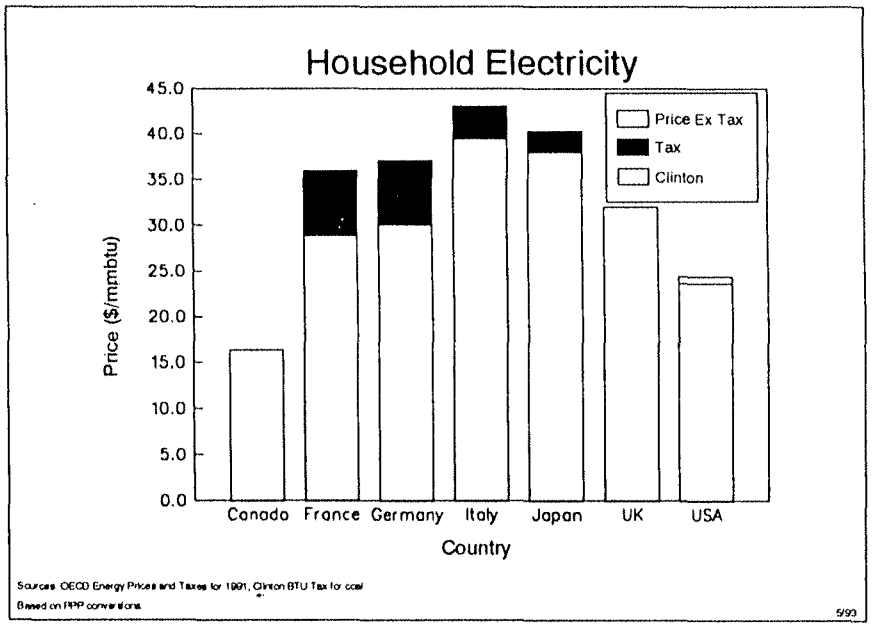
Tax impacts on Natural Gas are mixed and limited to the Household sector.



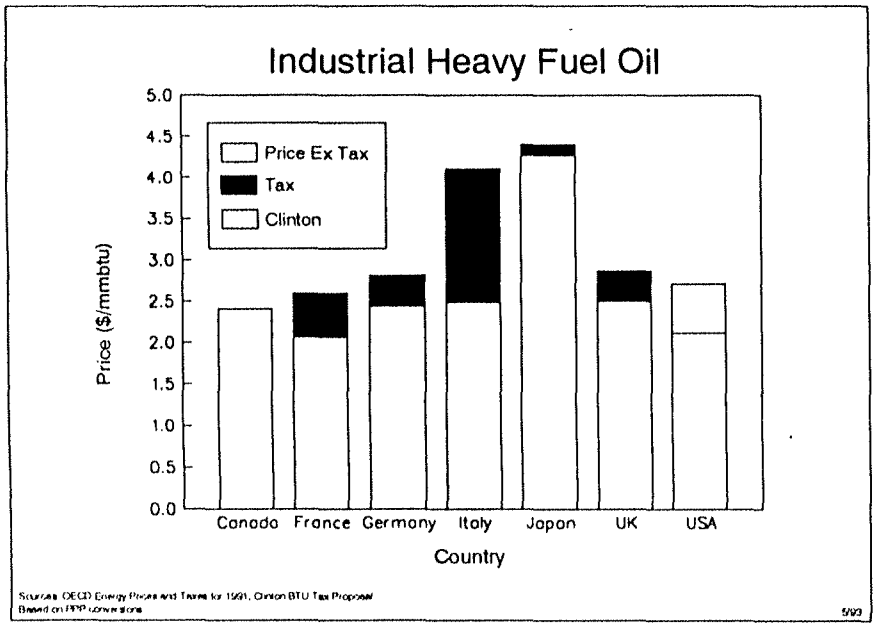


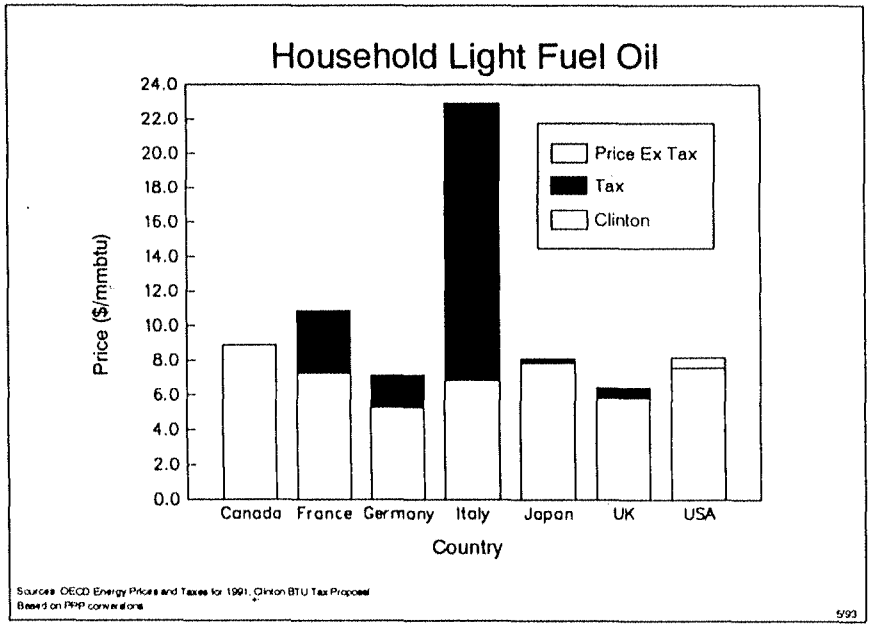
End use taxes play little role in explaining large differences in electricity prices.



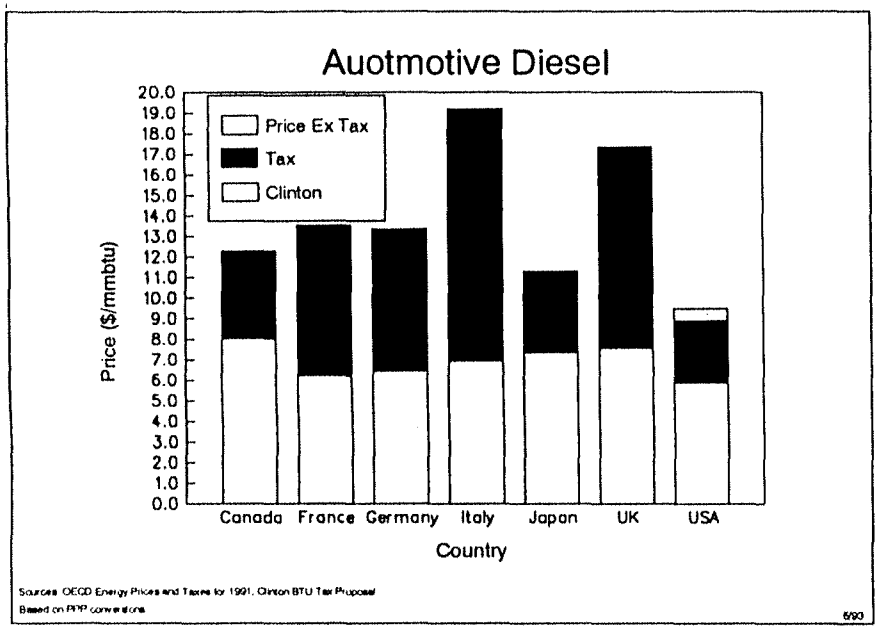


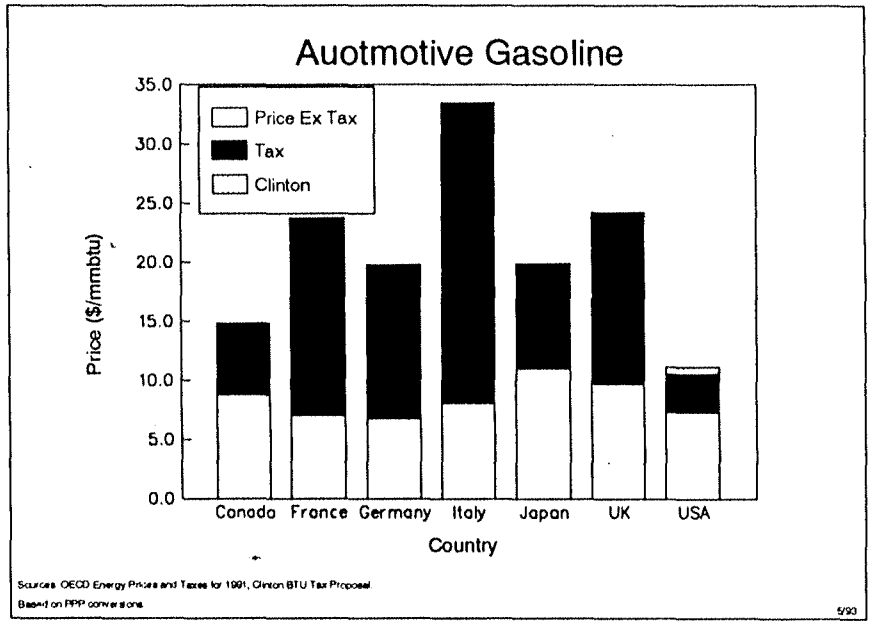
End use taxes vary substantially for fuel oil consumption.





The large differences in end use taxes for oil consumption appear in the transportation sector, where international competition plays a minimal role.





The Clinton tax proposal was modest in the international context:

- Large taxes in other countries are focussed on household and transport sectors.
- Except for the transport sector, price variation across countries is greater than variation in taxes.
- Clinton proposal would have added a small increment compared to existing taxes in other countries.
- Only special cases in industry, for very energy intensive uses, would remain for consideration for exemptions.

TAX REFORM

The U.S. economy includes many inefficient taxes that create incentives for private decisions that lower economic productivity:

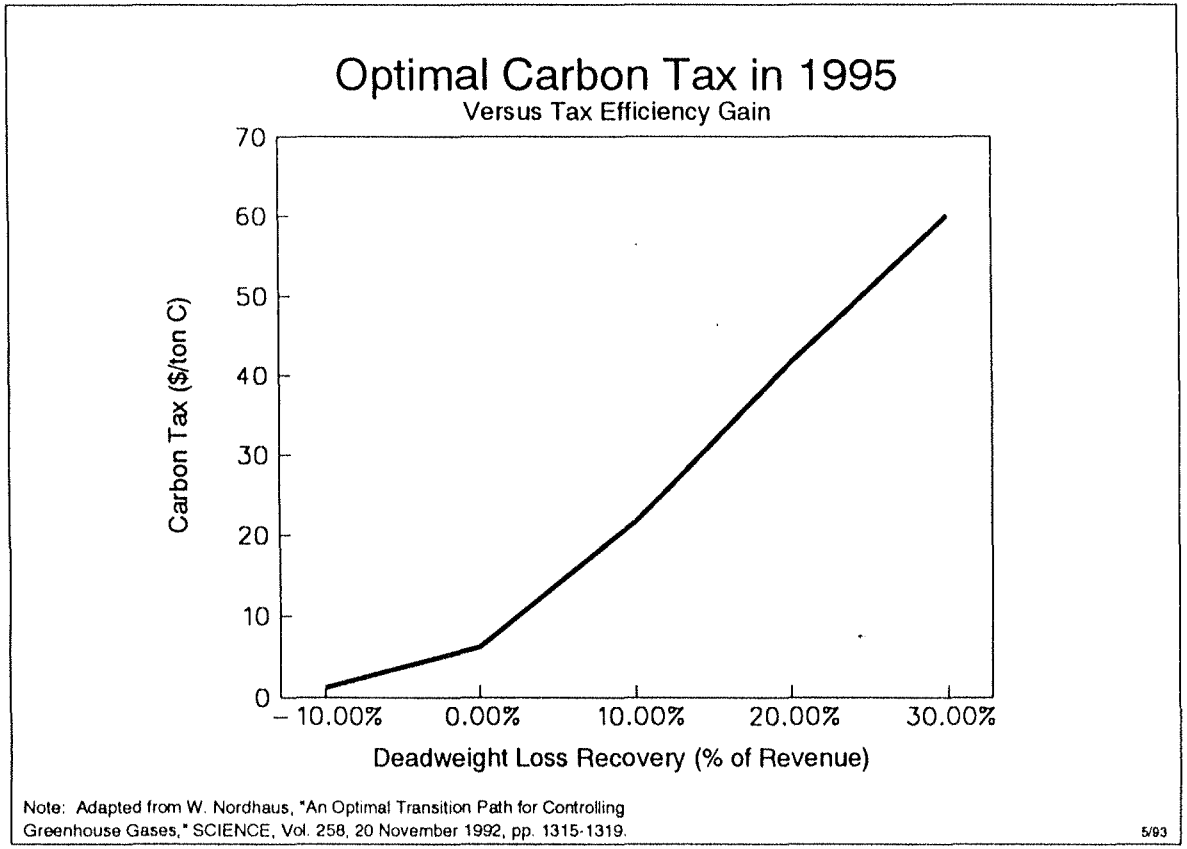
- Corporate income tax reduces incentives to invest.
- Labor taxes reduce incentives to work.

Taxing energy to internalize externalities creates revenue that can be used to reform taxes and improve economic productivity:

- Dale Jorgenson estimates that "the marginal efficiency cost at rates prevailing under the 1986 tax act was .391 so that the loss in efficiency for each tax dollar of revenues raised was 39.1 cents."
- William Nordhaus found that the optimal carbon emission tax could easily double in a scenario with the revenues providing the source of reduced taxes on capital and labor.

Recycling and Tax Efficiency

What we do with the revenues affects the overall costs, benefits, and optimal tax rate. There is a large potential for efficiency gains through tax reform.



Note: Adapted from W. Nordhaus, "An Optimal Transition Path for Controlling Greenhouse Gases," SCIENCE, Vol. 258, 20 November 1992, pp. 1315-1319.

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Budget Reconciliation Conference Proposal

Adopt a Broad-Based Energy Tax to Ensure Real Deficit Reduction While Meeting Human Needs

The Senate made an unacceptable tradeoff by reducing vital incentives for jobs (EITC, job training credits, Empowerment Zones), Medicare payments, hunger relief (Leland food stamps provision), and children's protection (Family Preservation, immunizations, foster care, child support) in order to protect energy special interests. The Conference Committee should adopt a fair and environmentally effective energy tax to ensure real deficit reduction and "Put People First" by adopting the House human needs provisions.

The Senate bill's gasoline tax of 4.3 cents per gallon (34.4 cents per million Btu) raises $50 billion less over 5 years and 18 billion less in 1998 and subsequent years than the Btu tax proposed by the President and passed by the House. Furthermore, as passed by the Senate the revenues from the gas tax are dedicated to the highway trust fund rather than deficit reduction. As a result, the Senate bill does much less to attack the long-term deficit problem and would not provide any significant incentives for energy efficiency or use of cleaner fuels. The House bill, by contrast, would encourage an annual reduction in greenhouse gas emissions of 25 million metric tonnes by 2000, about 20% of the reductions required to implement the President's commitment to return greenhouse gas emissions to 1990 levels by that date.

To achieve real deficit reduction while meeting human needs and enhancing environmental quality, the Conference should combine the Senate transportation fuels tax (but applied to general revenue) with a flat tax--**with no exemptions**--of 25 cents per million Btu on all traditional fuels (coal, oil, natural gas, nuclear power, and hydropower). This approach would be simpler than the House bill, applying a single rate to all energy consumption except for transportation. The transportation fuels tax replaces the oil surcharge in the House bill, from which a number of exemptions had been granted in any case. On a Btu basis the Senate tax is almost the same size as the oil surcharge in the House bill, but the Senate provision is more narrowly focused on the most damaging uses of petroleum.

To ensure that the overall tax package increases U.S. competitiveness, manufacturers could be allowed an energy efficiency tax credit against their energy tax liability. It would also be possible to cap any firm's tax liability at no more than 0.5% of the value of their sales while preserving the full environmental incentive created by the broad-based energy tax. The broad-based portion of this hybrid tax would be phased in over three years as in the House bill. This structure could be administered relatively easily by collecting the transportation fuels tax in the manner proposed by the Senate while collecting the broad-based portion at the terminal rack for petroleum and from the final consumer of coal and natural gas (the tax on hydroelectricity and nuclear power would be paid by utilities).

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Broad-Based Energy Tax with Manufacturing Credit

- Adopt Senate transportation fuels tax of 4.3 cents/gallon, but dedicate revenue to deficit reduction rather than the Highway Trust Fund.
- Apply transportation fuels tax to all alternative transportation fuels on an energy-equivalent basis.
- Adopt broad-based energy tax at a flat rate of 25 cents/million Btu on all traditional fuels (coal, oil, natural gas, nuclear power, and hydropower).
- Collect broad-based tax at the terminal rack for petroleum and from the final consumer of coal and natural gas (the tax on hydroelectricity and nuclear power would be paid by utilities)
- Allow manufacturers to credit investments in plant and equipment against their energy tax liability proportional to actual energy efficiency improvements achieved.[1]
- Credit would be calculated as a percentage of total capital investment in plant and equipment, with the percentage determined by the reduction in the ratio of energy consumption to the value of output (sales plus changes in inventory) compared to the lowest value reported during the previous three years.
- Total amount of credit would be capped at energy tax liability with carry-forward limited to two years.
- Energy tax liability could also be limited to no more than 0.5% of the value of output using a fixed credit for specific industrial categories to preserve the full marginal incentive for energy efficiency.[2]
- Credit would be calculated as a percentage of the value of output, with the percentage determined by the amount by which the average energy tax liability for each industrial category exceeded 0.5% during the previous three-year period.

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[1] See J. Hoerner and F. Muller, *Tax Notes*, June 21, 1993, Section IV(C).

[2] See J. Hoerner and F. Muller, *Tax Notes*, June 21, 1993, Section IV(A).

American Council for an Energy-Efficient Economy
WASHINGTON, DC / BERKELEY, CA

MAIN FEATURES OF ACE^3'S ENERGY TAX PROPOSAL

o Transport fuels (excluing aviation fuel) taxed at 6 cents per gallon ($0.48/MBtu), midway between the tax in the House and Senate bills;

o Utility fuels including electricity, natural gas, and home heating oil taxed at $0.27/MBtu, the base rate in the House bill;

o Electricity would be taxed based on fuel input for power production (from fossil fuels, nuclear, or hydropower) in order to promote energy efficiency and not penalize natural gas relative to electricity;

o Natural gas would be taxed whether the final sale is made by a pipeline or local distribution company;

o The utility tax would apply to all consumers -- residential, commercial, and industrial -- to avoid placing all of the tax burden on households;

o An investment tax credit would be offered to manufacturing industries for any investment that reduces energy intensity, capped at a company's energy tax liability (i.e., manufacturers would pay no net additional tax if they modernize and invest in energy efficiency or renewable energy measures).

o The estimated net revenue for the Treasury would be about $16 billion per year when the tax is fully phased in; if the tax is phased in over a two-year period, the total net revenue during 1994-98 would be approximately $72 billion.

This proposal meets the multiple objectives of substantial deficit reduction, equity among fuel types, promotion of energy efficiency and environmental improvement, and no negative impact on U.S. economic competitiveness. In fact, we project that this energy tax would result in a **net increase** of 24,000 jobs in the United States. It would also reduce U.S. carbon emissions by about 24 million metric tons, a substantial fraction of the reduction necessary to meet the President's commitment to stabilize U.S. greenhouse gas emissions.

ACE^3 contacts: Howard Geller or Skip Laitner

American Council for an Energy-Efficient Economy
WASHINGTON, DC / BERKELEY, CA

ENERGY TAX PROPOSAL

Howard Geller and Skip Laitner
July 13, 1993

OBJECTIVE

This proposal combines the House and Senate energy taxes in a way that: 1) maximizes tax revenue within the political bounds that now exist, 2) provides for broad coverage without burdening the manufacturing sector, 3) strives for equity among fuel types, and 4) encourages energy efficiency in order to provide economic and environmental benefits.

DESCRIPTION

We suggest combining a transportation fuels tax and a "utility" fuels tax, with utility fuels defined broadly to include electricity, natural gas, and home heating oil. Regarding transportation fuels, we suggest splitting the difference between the House (7.6 cents/gal) and Senate (4.3 cents/gal) taxes on gasoline and diesel fuel, resulting in a tax of 6 cents per gal or $0.48/MBtu. This portion of the tax would be applied to gasoline, diesel fuel, and marine fuel as in the Senate bill.

Regarding utility fuels, we suggest using the base rate in the House bill, $0.27/MBtu. A key issue is how to calculate the utility tax, independent of the question of exactly where and from whom it is collected. We strongly urge calculating the tax based on fuel input for power generation (fossil fuels, nuclear, and hydropower) at individual power plants, rather than just taxing electricity sales. This would apply the electricity portion of the utility tax to about 32 Quads of energy use rather than about 10 Quads, would give utilities an incentive to increase the efficiency of power generation and supply, and would avoid disadvantaging natural gas relative to electricity in end-use markets. Natural gas would be at a disadvantage if only end-use electricity is taxed and if electricity is taxed at the same rate as natural gas. The utility tax can still be included in utility bills and collected from end users, even if it is calculated based on power plant fuel input.

We recommend applying the utility energy tax to all types of consumers -- residential, commercial, and industrial. This avoids placing the energy tax burden totally on households, although they are likely to pay most of the overall energy tax. Natural gas should be included whether or not it is purchased from a distribution utility or a pipeline company. Home heating oil (including LPG) should be included in order not to encourage oil use over gas use in the residential sector. Likewise, oil products used by industry could be taxed, although we do not include them in our proposal or analysis.

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In order to make the tax more acceptable to energy-intensive manufacturing companies, we suggest including an investment tax credit for investments that reduce fossil fuel energy intensity. A 20 percent ITC, for example, could be offered to manufacturing industries for investments in energy efficiency, cogeneration equipment, process modernization, or renewable energy sources. The ITC should be capped at a company's energy tax liability.

An ITC of this form is relatively simple and straightforward, and would encourage investment in technologies that reduce carbon dioxide and other pollutant emissions. A company could use the ITC (or a combination of the ITC and normal expensing of energy costs when calculating income taxes) to offset its entire energy tax. With the ITC offset option included, we urge no automatic exemptions from the tax, i.e., aluminum producers, petroleum refiners, etc. would be covered by the utility tax but would have the opportunity to effectively "opt out" by making investments that lower energy intensity. If a large fraction of companies take advantage of this option, it would have a significant impact on national CO2 emissions.

ESTIMATED TAX REVENUE

In estimating tax revenue, we use DOE/EIA's projection of national energy use in 1996, the mid-year in the 1994-98 period (see Annual Energy Outlook 1993). We assume the energy tax cuts consumption from otherwise projected levels by 1.5%, due to consumer response to the modest tax. Also, we assume that the tax is phased in at half the full value in the first year and reaches full value in the second year and thereafter. In estimating the net revenue for the Treasury generated by the tax, we assume that the ITC feature and the ability to deduct energy costs from business income for tax purposes results in net revenue equal to 25% of gross revenue for the utility tax applicable to all businesses (manufacturing as well as commercial sector companies).

In terms of gross tax revenue, our proposal would generate about $22.7 billion per year as of 1996 ($9 billion from the transportation fuels portion, $9 billion from the utility portion on businesses, and $4.7 billion from the utility portion on residential consumers). With the business adjustment described above, we estimate net revenue for the Treasury of about $15.9 billion per year as of 1996 ($9 billion from the transport fuels portion, $2.3 billion from the utility fuels portion on businesses, and $4.7 from the utility fuels portion on residential consumers). If the tax is phased in over two years, the total net revenue for the Treasury during the five-year period (1994-1998) would be approximately $71.7 billion. This is almost identical to the amount of net revenue attributed to the energy tax in the House bill. On a net basis, a large majority but not all of the tax would be paid directly by residential consumers.

ESTIMATED EMPLOYMENT IMPACTS

Extending our previous economic impact analysis of the broad-based energy tax to this current proposal (see, "Energy Savings and Job Impacts from the Proposed Energy Tax," ACEEE, 1993), indicates a positive although modest employment benefit. The findings suggest that as businesses and consumers respond to the modest price increases from the energy tax, they will become more energy efficient. The money saved due to reduced energy purchases will, in effect, become a source of new discretionary income.

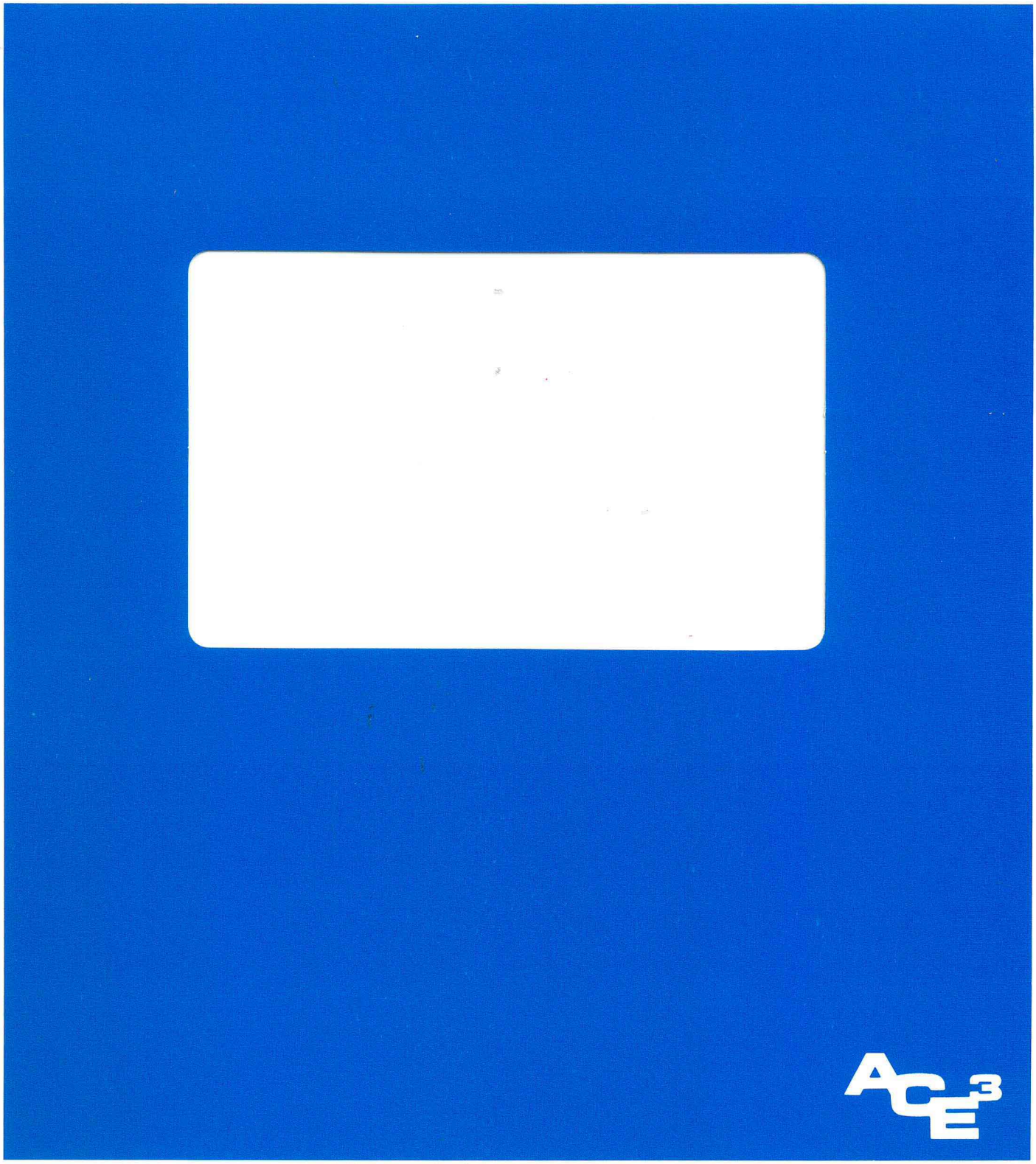
The new income will, in turn, enable businesses to expand their output of goods and services, and provide households the opportunity to purchase more food, clothing, housing, and other consumer goods. Perhaps more importantly, the new income will be spent in economic sectors which have a much higher labor intensity than the energy industry as a whole.

By accounting for the energy savings, and for the higher labor intensities in non-energy sectors, we find that the energy tax proposal suggested in this paper, by itself, will lead to a net increase of about 24,000 jobs nationwide. Most of the net job gain would result from the transportation fuels tax. Consumers and businesses could realize much greater benefits if energy efficiency efforts are expanded at the same time that the tax is phased in. This is one of the objectives of the investment tax credit previously described.

ESTIMATED ENVIRONMENTAL IMPACTS

As with any strategy that promotes greater energy efficiency, the energy tax will reduce pollutant emissions and provide environmental benefits. The estimated 1.5 percent energy savings from the tax proposal descrived above would reduce U.S. carbon emissions by about 24 million metric tons per year. This estimate is similar in magnitude to the reduction projected for the original energy tax proposed by the Clinton Administration. The reduction represents about 20-25 percent of the total carbon emissions reduction necessary to meet the President's commitment to stabilize greenhouse gas emissions at their 1990 level by 2000. By enacting a significant energy tax, achieving the stabilization commitment will be greatly facilitated.

Enacting an energy tax will lead to reductions in other pollutants beside carbon dioxide. We estimate that the tax described above will reduce NOx emissions by about 300,000 metric tons per year, CO emissions by about 680,000 metric tons per year, and SO2 emissions by about 180,000 metric tons per year. The SO2 estimate asssumes the goals of the 1990 Clean Air Act Amendment are met (i.e., baseline emissions are reduced by 10 million tons). The energy tax will lead to reductions in particulates, volatile organic compounds, and other pollutants as well.



AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY
Washington, D.C./Berkeley, California

Energy Savings and Job Impacts From the Proposed Energy Tax

Skip Laitner

May 1993

PRELIMINARY DRAFT

I. Introduction and Summary

The Clinton Administration has proposed a modest, broad-based Federal energy tax as part of its deficit reduction strategy. When fully phased in, the proposed tax would increase energy prices about 7.5 cents per gallon of gasoline, 26 cents per thousand cubic feet of natural gas, and 0.2 cents per kilowatt-hour (kWh) of electricity on average.

The tax would raise on the order of $33 billion per year on a gross basis when it is fully phased in, without accounting for indirect reductions in other tax payments. Given current energy prices, the tax would increase the average retail energy price by about seven percent. Given that the tax would be phased in three steps between 1994 and 1996, the impact on energy prices at each step would be relatively modest.

A debate is underway concerning the impacts the tax would have on energy use, the economy, and the environment. The Administration and proponents of the energy tax claim that the tax as proposed will stimulate energy conservation, encourage use of cleaner energy sources, and help the economy by reducing the Federal deficit. Opponents claim that higher energy prices will harm the economy, reduce U.S. competitiveness, and lead to significant job loss.

As currently designed, the ability of the energy tax to promote a higher level of energy efficiency rests solely on the consumer response to modestly higher energy prices. We find that by itself, the proposed energy tax is likely to reduce future energy consumption by around two percent. However modest the direct energy savings may be, it will help offset the impact of the tax on consumers' energy bills. Moreover, because of this energy savings and the shift in spending patterns it will induce, we find that the proposed energy tax can have a small positive impact on jobs and national income as a whole. We estimate that adoption of the energy tax would lead to a net increase of about 40,000 jobs by 2003.

Our results differ from those of the American Petroleum Institute (API), the National Association of Manufacturers (NAM), and other critics of the energy tax. These groups project that the tax would cause significant reductions in economic output and employment. We believe, however, that these groups have used flawed and/or incomplete assumptions in their analyses of the proposed tax. In particular, API and NAM have made unreasonable assumptions about changes in economic output, inflation, and government monetary policy in response to an energy tax. Furthermore, both API and NAM appear to ignore the potential benefits of lower interest rates and energy conservation in response to the tax. In addition, they may be ignoring the economic activity supported by Federal expenditures.

If adoption of the energy tax is accompanied by new or expanded initiatives to increase the nation's overall level of energy efficiency, the positive impacts on jobs and national income could be much greater. By adopting the energy tax and investing on the order of $4.0 billion per year in cost-effective energy efficiency programs, the Federal government could create more than 550,000 net additional jobs in the U.S. economy.

To understand these prospects, this paper first explores the concept of price elasticity and its influence on energy demand. It then estimates the impacts of the proposed energy tax on the nation's future energy demand, employment and income. Building on this analysis, the paper then evaluates how a program to recycle tax revenues into energy efficiency investments can lower overall energy costs and create new employment opportunities.

II. The Concept of Elasticity

Elasticities state a relationship between the amount of a commodity demanded and the variables which shape that demand either in the short-run or the long-run. Generally, the two biggest variables which affect consumption are income and price.[1] In that regard, there are three specific elasticities or relationships which must be considered as part of an overall understanding of energy consumption patterns. They are referred to as price elasticities, cross elasticities, and income elasticities.

Price elasticity refers to the effect of a commodity's own price on its demand. For that reason, it is sometimes referred to as the *own price elasticity*. This is defined as the percentage change in the use of a given commodity when the price of that same quantity changes by one percent.[2]

Price elasticity usually has a negative value to show that as the price increases, demand decreases; or as the price decreases, the demand increases. If a commodity has an elasticity that is greater (in absolute value) than 1.0 — meaning that if the change in demand is greater than one percent for a one percent change in price — then it is said to have an elastic demand. If it has an elasticity of less than one, it is said to have an inelastic demand. If a one percent change in price induces a one percent change in demand, the demand is said to be unitary elastic. Finally, an elasticity of zero implies a perfectly inelastic demand; that is, a change in price has no impact on consumption.

Cross elasticity measures the effect of the price of one commodity on another commodity's demand. More formally, cross elasticity is defined as the percentage

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1. The formal statement of the relationship between quantity and a variable is expressed mathematically as $q=f(v)$, where "q" is the amount of a commodity that will be demanded or consumed for each value of a particular variable. In economics, this is nothing more than the demand law where "q" is said to be a function of "v". The variable may be either the price of a commodity or the income of the consumer who wishes to buy the commodity.

2. If we were to evaluate the own price elasticity of electricity as the commodity in question, the mathematical expression might look like:

$$Ep = [(kWh_2 - kWh_1)/kWh_1]/[(P_2 - P_1)/P_1]$$

or, price elasticity equals the kilowatt-hour (kWh) sales in year two less the kWh sales in year one with the resulting total divided by the year one sales; and with this result, in turn, divided by the year two price less the year one price as this total is finally divided by the year one price.

change in the quantity of one commodity such as electricity when the price of a second commodity such as natural gas changes by one percent. In a sense, the existence of a strong negative cross elasticity implies the availability of an alternative or substitutes.[3] A low negative cross elasticity, on the other hand, implies the lack of substitutes and (quite likely) a low price elasticity. Finally, *income elasticity* refers to the impact of income changes upon a specific commodity; or, the percentage change in the quantity demanded when income changes by one percent.

To illustrate each of these three elasticities, let us begin by examining price elasticity. Let us suppose that households are now consuming about 10,000 kilowatt-hours (kWh) of electricity per year on average. Let us further suppose they pay an average of 10 cents per kWh, and that the nation has an average income of about $10,000. To determine the price elasticity for electricity, let us next suppose that kWh prices increase to 12 cents per kWh and that consumption falls to 9,000 kWh. The change in price is 20 percent, while consumption falls by 10 percent. Under these circumstances, the price elasticity of electricity would then be -0.10 divided by 0.20, or -0.5. Stated differently, for each percentage change in kWh price, the demand will fall by 0.5 percent.

Cross elasticity provides another perspective on changes in demand. If we noted that a 10 percent rise in natural gas prices led to a decrease in natural gas use but a two percent increase in electricity use, we would then conclude that electricity is a substitute for gas. The cross elasticity of electricity with respect to natural gas prices would be 0.02 divided by 0.10, or 0.20. In this case, a one percent change in natural gas prices would increase the demand for electricity by 0.2 percent.

Finally, as might be expected for income elasticity, a positive change in income would likely produce a positive increase in the consumption of energy. Thus, if household income rose by 10 percent and household electricity usage increased by six percent, we would then say that a one percent change in household income would lead to a 0.6 percent change in the demand for electricity.

A. Partial Elasticities

Perhaps the most important feature of elasticities is that they cannot be measured in isolation. For instance, a change in energy prices is unlikely to happen independently from changes in income (or other factors, for that matter). This means that almost all elasticities are only *partial elasticities*. To provide even a minimal review, therefore, of the impact of price on future energy demand, we should also include the influence of income on that demand. As we shall see later in this paper, income has a much stronger impact on changes in energy consumption than do price changes (given the current mix of energy technologies).

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3. A positive cross elasticity usually implies a complement rather than a substitute. For example, if the price of gasoline goes down, and the demand increases for both gasoline and vacations, the demand for vacations is said to be a complement for gasoline.

Failure to incorporate the influence of both price and income often leads to an inappropriate estimate of future energy demand. Since almost all of the elasticities cited in the literature are only partial elasticities, it is important to include the influence of future income on baseline energy consumption. Moreover, the analyst needs to be careful to reflect price changes from proposed tax increases as increases above the prices that are otherwise expected to occur.

B. Short-Run Versus Long-Run Elasticities

Up to this point the discussion has been limited to largely short-run elasticities. These reflect demand responses over a short period of time, usually over a year or less. As might be expected, short-run elasticities tend to have a smaller absolute value compared to a longer period of time. While short-run estimates of price elasticities range from a low of -0.03 to as much as -0.5, long-run estimates can exceed -1.0. Bohi, for example, concluded that while short-run energy price elasticities generally hovered around -0.20, the long-run values fell between -0.50 and -0.70. He further concluded that estimates for elasticities greater than -1.0 were highly uncertain.[4]

The reason for the difference in short-run and long-run elasticities is that consumers and businesses have more of an opportunity to change energy use patterns over the long-term. Even with a significant price hike in gasoline prices, for example, it is difficult for commuters to change either their driving patterns or to improve the fuel economy of their existing automobiles within a period of a year. Over a much longer period, however, they not only can buy a more fuel-efficient car, but manufacturers might begin to add fuel economy measures to all cars in their fleets. In addition, it may take consumers a number of years to adopt alternatives to driving — whether mass transit, telecommuting or car pooling. All of these conditions tend to increase the consumer response to higher prices over the long term.[5]

Even with the distinction between short-run and long-run elasticities, the overall elasticity concept is a highly simplified model of the world. While energy price and income are certainly major determinants of energy demand, others determinants include population, living standards, the technological opportunities and costs for increasing energy efficiency, the existing efficiency standards and other policies adopted to influence energy demand, and the behavioral and institutional barriers that discourage efficiency improvements. In certain cases, these other factors can play a larger role in shaping energy demand that either price or income. Perhaps the most notable example is the role of fuel economy standards in reducing overall petroleum demand. One researcher concluded that fuel efficiency standards were roughly twice as important of an influence

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4. Douglas R. Bohi, *Analyzing Demand Behavior: A Study of Energy Elasticities* (Baltimore, MD: The Johns Hopkins University Press, 1980), Table 7-1, page 159.

5. This assumes, of course, that the price effect is not offset by higher income levels or other determinants of demand.

as gasoline prices during 1978-89.[6]

III. Insights From Past Studies

Over the years there has been substantial interest in the notion of elasticities for energy-related commodities. A 1956 study for the state of Washington, for example, suggested that "an increased or decreased consumption of gasoline has coincided with an increase or decrease in incomes in the state, but that the change in gasoline consumption has not been proportionately as great. It also appears that there has been relatively little response in consumption to a change in the price of gasoline (either by the seller or by the legislator in changing the tax)."[7] More than 40 years later, the 1993 *Annual Energy Outlook* continues to report a similar response to changes in both price and income.[8]

Because there are so many determinants of demand, even the most sophisticated analytical tools produce, at best, a very uncertain estimate of price and income elasticities. Moreover, the estimation techniques are varied and generally produce results that are relevant only for the series of data which produced the results in the first place. As might be expected, therefore, price and income elasticities are specific to a particular demand function and at a given point in time. Nonetheless, the overall relationship between energy demand and price and income elasticities has remained reasonably stable since the estimates were first produced.

The 1956 Washington State study indicated that in the period from 1946 to 1955, the price elasticity for gasoline was -0.08; that is, a one percent change in price would likely produce "an opposite 0.08 percent change in consumption." Based on the same times series data, "an income change of 1 percent would have been associated with a 0.91 percent change in consumption in the same direction."[9] From this we note that the absolute value for income elasticity, 0.91, is much larger than the absolute value for the price elasticity. This implies that changes in income will have a much larger impact on gasoline demand than changes in income. In other words, the demand for gasoline is relatively inelastic with respect to price compared to changes in income.

As an example the stability of price elasticities over time and between nations, a 1983

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6. David L. Greene, "CAFE OR PRICE?: An Analysis of the Effects of Federal Fuel Economy Regulations and Gasoline Prices on New Car MPG, 1978-1989," *The Energy Journal*, Volume 11, Number 3, 1990, pages 37-57.

7. See, Harry E. McAllister, *The Elasticity of Demand for Gasoline in the State of Washington*, Economic and Business Studies Bulletin No. 29 (Pullman, WA: Bureau of Economic and Business Research, State College of Washington, February 1956), page xiii.

8. See especially, Energy Information Administration, *Assumptions for the Annual Energy Outlook 1993* (Washington, DC: U.S. Department of Energy, DOE/EIA-0527(93), January 1993), page 26.

9. Harry E. McAllister, op. cit., page xiii.

working paper reviewing own-price elasticities for various OECD countries, including the United States, showed that final (undifferentiated) energy demand ranged from -0.02 to -0.18.[10] A 1979 study published by the Institute for Energy Analysis indicated a modest range of long-run elasticities from -0.23 for coal to -0.50 for electricity. The long-run elasticity for petroleum fuels was estimated as -0.35.[11]

Finally, the *Annual Energy Outlook 1993* recently updated its own estimates of both price and income elasticities for vehicle miles travelled (VMT) as this factor affects the overall demand for transportation fuels. This re-estimation resulted in a price response of -0.11, while the income response showed a value of 0.82. Again, an important insight from these results is that the impact of changes in income will significantly outweigh similar changes in energy prices.

IV. Our Own Price Impact Analysis

To better understand how the proposed energy tax might affect energy use, we performed an analysis of how price changes and income levels might interact to shape future energy demand. The analysis is based on the set of projections from the *Annual Energy Outlook 1993* (AEO) prepared by the U.S. Department of Energy.[12]

The AEO projections are based upon a complete set of economic and demographic relationships. They also incorporate the already anticipated changes in the nation's technology base. The data reflects, for instance, the changes which are likely to occur from the enactment of the Energy Policy Act of 1992. In effect, the AEO reasonably captures the influence of other determinants on total energy demand. This allows us to focus more completely on the impact of proposed energy tax as it affects future prices. The data are also formatted in a way that makes it relatively easy to verify likely responses to changes in overall energy prices.

The year 2010 was selected as the basis of comparison to capture all long-run impacts in the analysis. Based upon the data in the Reference scenario, the Department of Energy (DOE) presently forecasts an increase in energy consumption from 84.6 quadrillion Btus (Quads) of primary energy in 1990 to 106.7 Quads in 2010. This suggests an annual growth rate of 1.2 percent. At the same time, the average price of energy at the end-use is projected to increase one percent annually, from $8.68 per

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10. Axel Mittlestädt, "Use of Demand Elastics in Estimating Energy Demand," working paper No. 1 for the OECD Economics and Statistics Department (Paris, France: Organization of Economic Co-operation and Development, March 1983), Table 2.

11. Edward L. Allen, *Energy and Economic Growth in the United States* (Cambridge, MA: The MIT Press, 1979), page 161. The values cited here are for the 101-quad rather than the 126-quad scenario for the year 2000 since they lower numbers are more reflective of actual projections published by the U.S. Department of Energy.

12. *Annual Energy Outlook 1993*, op. cit.

million Btu (MBtu) in 1990 to $10.36 per MBtu in 2010 (all measured in 1991 dollars). Real Gross Domestic Product (GDP) is projected to grow from $4,885 billion in 1990 to $7,287 billion in 2010 (measured in 1987 dollars).[13]

Adapting the AEO reference case data (and built-in assumptions about the nation's present and anticipated future technology mix) provides the following demand function in a logarithm format:[14]

(1) $$\text{Ln(Quads)} = \alpha + \beta_1 * \text{Ln(PRICE}_t) + \beta_2 * \text{Ln(GDP}_t)$$

where:

Quads = U.S. Energy Consumption in Quadrillion Btus
α = Constant Term
β_1 = Price Elasticity of Demand for Primary Energy
β_2 = Income Elasticity of Demand for Primary Energy
PRICE = Real Price of Primary Energy in 1991 $
GDP = Real Gross Domestic Product in 1987 $

Data Period: 1990 to 2010

The model expressed in equation four generated a constant term of -1.06, a long-run price elasticity of -0.33, and a long-run income elasticity of 0.73. The implication of this result is that a 10 percent increase in the weighted price of energy will produce a 3.3 percent decrease in primary energy consumption. Similarly, a 10 percent increase in GDP will result in a 7.3 percent increase in energy demand.[15]

For all of the variables and parameters used to estimate the 1990-2010 energy consumption patterns, it is interesting to note that the complexity and technology assumptions of the AEO model can be distilled to the above equation and results. In other words, equation one suggests that price and income explain more than 99 percent of total energy demand. One caution is appropriate, however. While the results are significant in their current form and with the existing data, the elasticities derived here may not be applicable to other times series data or models that use them.

With the long-run parameters of the price and income which the AEO model established, we can now forecast the year 2010 energy consumption. Recalling that the 2010 price is estimated at $10.36 (1991 dollars per MBtu) and that GDP is projected to be $7,287 (billions of 1987 dollars), the equation above indicates a energy consumption of 107.0

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13. See, Tables A2, A3, and A7, *Annual Energy Outlook*, op. cit.

14. The logarithm format is useful since the parameters that are generated, in this case β_1 and β_2, are elasticities for price and income, respectively.

15. Both independent variables in the equation are statistically significant in terms of their T-statistic where PRICE = -4.64 and GDP = 20.10. Moreover, total R-squared was 99.98 percent.

Quads. The question now becomes how the energy tax proposal will affect this result. In effect, we must translate the proposed tax into a year 2010 price hike.

Based upon the energy tax proposal as of April 1993, gasoline will be taxed at the rate of 7.5 cents per gallon, natural gas at 26 cents per 1,000 cubic feet, coal at $5.57 per ton, and hydro and nuclear energy at about $2.66 per 1,000 kWh when the energy tax is fully implemented.[16] It appears that the energy tax will lead to about a seven percent increase in the average cost of energy at least initially. In addition, the proposed energy tax would be indexed to inflation.

We assume the energy tax will raise the average retail energy price in 2010 from $10.36 per MBtu as forecast in the AEO to $11.09 per MBtu. If overall GDP remains unchanged as a result of the modestly higher energy prices,[17] we now have the required two economic drivers to plug into the demand function found in equation one. First we have a positive change in energy prices from $10.36 to $11.09 per MBtu, and second, we have the estimated growth in GDP. Using both variables in the model indicates that the year 2010 consumption will decline from 107.3 to 104.7 Quads. This is a 2.2 percent decline in energy demand as a result of the proposed energy tax. Due to the increase in GDP, the forecasted energy consumption of 104.7 Quads is still 24 percent greater than energy consumption as of 1990.

V. Economic and Job Impact Analysis

A. Our Own Job Impact Analysis

Cost-effective investments in energy efficiency technologies will improve overall economic efficiency. This, in turn, creates jobs. To test this notion, we established a simplified model to evaluate two different energy tax scenarios: 1) a revenue-raising, energy tax-only scenario that generates new income for the federal government; and 2) an energy tax and tax-recycling scenario in which part of the increased revenues are invested in ten energy major efficiency programs. This tax-recycling scenario is more fully described in a paper previously released by the American Council for an Energy-Efficient Economy.[18]

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16. "Administration Alters Proposal for Energy Tax," *The Wall Street Journal*, April 2, 1993, page A2.

17. See the discussion on how the energy tax is likely to affect future changes in GDP in the section that follows. For a further review on this point, see also, William U. Chandler and Andrew K. Nicholls, "Assessing Carbon Emissions Control Strategies: A Carbon Tax or a Gasoline Tax," a policy paper prepared for the American Council for an Energy Efficient Economy, February 1990, pages 16-21.

18. See Howard Geller, John DeCicco, and Steven Nadel, "Structuring an Energy Tax So That Energy Bills Do Not Increase," (Washington, DC: American Council for an Energy-Efficient Economy, March 1993).

In brief, the ACEEE tax-recycling proposal offers a specific set of energy efficiency initiatives that are funded using about 12 percent of the proposed energy tax revenues.[19] Table 1 summarizes the ten energy efficiency initiatives, which address energy use and efficiency opportunities in all sectors of the economy. Through the 1994-2003 period, the ACEEE proposal calls for $43 billion in federal expenditures which would, in turn, leverage another $160 billion in private investments. Cumulative energy and energy bill savings, in that same period, would be 55 quads and $394 billion, respectively. The net savings to consumers and businesses over this 10-year period would be $191 billion. Clearly, the tax-recycling scenario offers a cost-effective investment for the American economy.

The tax-only and the tax-recycling scenarios were evaluated using an input-output model. This approach utilizes job and income multipliers to estimate total economic impacts that result from spending changes within each sector of the economy. In this case, the task is to account for all changes in consumer, business and government spending that might be brought about as a result of the proposed Btu tax and the energy efficiency programs.

Each spending change — whether a reduction in energy bills or a loss of disposable income as a result of higher taxes — is matched with its appropriate multiplier. The spending change times the multiplier yields a total impact on the economy for that individual expenditure. The sum of all positive and negative impacts then provides a net job and economic impact which might be expected from a given policy initiative. In other words, to evaluate the effects of the proposed energy tax, all benefits and all costs must be added up to determine the net impact on the economy.[20]

For this analysis, we assume that the energy tax receipts will be used to reduce the Federal deficit.[21] A number of major spending changes are implicit within this policy. First, consumers and businesses will have less discretionary income, thereby reducing consumer spending. The lower deficit will also result in fewer interest payments since borrowing will be reduced. As consumers respond to the increase in energy prices, they will tend to use less energy. The reduction in energy use will mean less revenue for the nation's energy suppliers. Finally, by purchasing less energy, consumers and businesses will have slightly more money to invest and spend on other goods and services.

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19. Of course, the energy efficiency initiatives could be funded out of the general Treasury using funds shifted from other energy and/or non-programs.

20. For a similar treatment of how economic impacts of an energy efficiency scenario might be evaluated, see, Howard Geller, John DeCicco and Skip Laitner, "Energy Efficiency and Job Creation: The Employment and Income Benefits from Investing in Energy Conserving Technologies," American Council for an Energy Efficient Economy, Washington, DC, October, 1992.

21. If the point of our analysis were to evaluate the impact of the Administration's entire budget and tax package, we would then determine whether the full budget offers a net reduction in the federal deficit, or whether total spending will increase beyond the level of the proposed energy tax. However, since we are only trying to understand the impact of the energy tax, it is reasonable to assume that all energy tax revenues will be used to reduce the deficit.

The spending changes in both the tax-only and the tax-recycling scenarios were evaluated for their job and income impacts using the Regional Input-Output Modeling System (RIMS) data for the U.S.[22] The key multiplier ratios are summarized in Table 2. It is important to note in Table 2 that the energy sectors tend to have the smallest job and income multipliers — that is, expenditures for energy will support fewer jobs and less income in the U.S. economy than expenditures on other types of goods and services. Thus, diverting revenues away from energy purchases, due either to higher energy prices or targeted energy efficiency programs, and towards other purchases will lead to a net increase in jobs and income.

We assume that consumers and businesses will invest in energy efficiency measures, when they respond to higher energy prices (as indicated by the estimated energy price elasticities). Furthermore, we assume that there is a cost for these energy efficiency measures. In reality, the actual changes in the nation's energy use will result from investments in energy efficiency measures and changes in consumer behavior. The latter, actions such changing thermostat settings or driving patterns, generally do not involve an economic cost. Therefore, the analysis presented here is conservative in that it probably overstates the cost of saving energy in response to the energy tax and consequently understates the overall economic benefits.

In this analysis, we provide the economic impacts for the year 2003 which coincides with the last year of the ACEEE proposal. The baseline (pre-tax) scenario was drawn from the 1993 Annual Energy Outlook.[23] It was then modified to incorporate changes in energy prices and the anticipated consumer response to those price changes as measured by price elasticities. The analysis that follows assumes an average price elasticity of -0.33 as it was generated from the AEO data and described in the previous section.

Table 3 provides the primary energy consumption (in trillion Btus) by end-use sector in each of the scenarios evaluated. Based upon an average price elasticity of -0.33 and the resulting energy price increase from the Btu tax, the tax-only scenario shows a 1.9 percent drop in national energy consumption compared to the baseline scenario. On the other hand, the tax-recycling scenario shows a 12.6 percent drop in consumption. This is the result of investments in cost-effective energy efficient technologies accelerated through targeted energy efficiency programs.

Table 4 shows the results of the economic impact analysis. For both scenarios the fuel-weighted price increase in the year 2003 is $0.396 per million Btus (in 1991 dollars). Under the tax-only scenario, the energy tax generates about $35.7 billion of gross tax revenues for the federal government in 2003. The price increase induces a consumer energy bill savings of about $11.9 billion, leading to a net loss for consumers of about

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22. Bureau of Economic Analysis, *Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System (RIMS II)*, U.S. Department of Commerce, Washington, DC, 1992. It should be noted that while the job multipliers refer to actual changes in employment, the income multipliers refer only to changes in earnings, often referred to as wage and salary compensation.

23. See Appendix A of the *Annual Energy Outlook 1993*, op. cit.

$23.8 billion in that year.

Even with this initial loss of discretionary income, the energy tax produces a modest but positive economic impact for the economy as a whole, as indicated in the last two rows of Table 4. When all costs and benefits are added up, together with their appropriate multiplier effects, the tax-only scenario yields a net gain of 39,000 jobs and $2.3 billion per year of additional income by 2003.

The reason for the net increase in jobs and income is that the energy bill savings are respent in sectors which have larger jobs and income multipliers than the energy sectors (see Table 2). Also, government sector multipliers are somewhat larger than the household (or residential) multipliers. Since households are the major source of tax revenues, any funds moved from households to the government sector activities will likely create a small net gain as well.[24]

By comparison, the tax-recycling scenario generates a substantial increase in economic benefits compared to the tax-only scenario. Our analysis indicates that by adopting the energy tax along with targeted energy efficiency programs, consumer savings will increase to $29.9 billion by 2003. This savings will lead to a net increase of about 563,000 jobs and provide additional wage and salary income of $13.9 billion annually by 2003.

Because the price response is such a significant driver of energy bill savings, particularly in the tax-only scenarios, we also tested how changes in the assumed price elasticities might affect the outcome of the analysis. Table 5 provides the results of this sensitivity analysis.

Drawing from the literature, notably the review provided by Bohi,[25] and a report by Mittlestädt,[26] it appears that a reasonable lower boundary for the average energy price elasticity is -0.20, while a value of -0.50 establishes a reasonable upper boundary. Using these upper and lower limits, Table 5 shows the reduction in energy consumption that is attributable only to the price effect, ranging from 1.2 to 2.9 percent (with the middle value of nearly two percent). Similarly, the employment impact ranges from a net gain of 3,000 jobs to as many as 90,000 jobs in the tax-only scenario. As in the main analysis (see Table 4), the tax-recycling scenario provides much greater economic stimulus for the nation, with as many as 615,000 additional jobs in 2003 assuming high consumer response (i.e., the upper limit of potential energy price elasticity).

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24. This will be true up to the point where other constraints such as higher interest rates may begin to offset any initial advantage of government spending compared to household purchases. But this is not likely to occur under this scenario since: a) the deficit is brought down which provides a downward pressure on interest rates; and b) energy efficiency improvements tend to be less costly than new energy supply which tends to free up even more sources of capital.

25. *Analyzing Demand Behavior*, op. cit.

26. "Use of Demand Elastics in Estimating Energy Demand," op. cit.

There is one further item that should be noted in this analysis. Although there will be more total employment in the tax-recycling scenario, the average wage rate is expected to fall — about $40 per job compared to the baseline scenario. For the most part, the reason is that jobs within the energy industry tend to be better paying relative to other jobs in the economy. On the other hand, the estimated cost of living is expected to drop by about $200 per job as a result of reduced energy consumption. Since the reduction in average energy bill more than offsets the reduction in average annual wage rate, consumers still come out ahead.

B. A Critique of NAM and API Studies

Since the introduction of the energy tax there have been a number of studies which indicate that such a policy would negatively impact the American economy. The most recent macroeconomic studies have been published by the National Association of Manufacturers (NAM) and the American Petroleum Institute (API). NAM, for example, suggests a loss of Gross Domestic Product (GDP) of $38 billion by 1998 if the energy tax is enacted.[27] In a separate analysis, the API hinted that losses to GDP would be $34 billion by 1998.[28] As a result of these losses, both NAM and API forecast job losses of 400,000 to 600,000 by 1998.

The NAM and API analyses rely either on internal studies or studies performed by other consultants on their behalf. API, for example, utilized the consulting services of DRI/McGraw-Hill in deriving its estimates of economic impacts.[29] Neither organization has made clear the assumptions, models and algorithms which underlie their results. Although this makes it difficult to critique their analysis, we can generate some insight into why their evaluations have produced very negative results by examining the information that is available, and by reviewing similar DRI reports which provide greater detail.

DRI suggests that energy taxes have adverse short-run impacts because they simultaneously raise inflation and reduce after-tax income. The result, according to DRI, is that the Federal Reserve Board would use monetary pressure to reduce inflationary impacts. Such a move would deepen recessionary trends that causes a further loss in

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27. See, "Testimony of Paul R. Huard on the Administration's Energy Tax Proposals, before the Committee on Finance, United States Senate, on behalf of the National Association of Manufacturers, April 22, 1993.

28. "U.S. Energy Policy in the Clinton Administration", remarks by Charles J. Dibona to the National Economists Club, Washington, DC, on behalf of the American Petroleum Institute, April 12, 1993.

29. "Comparison of the Economic Impact of the Clinton Administration's Proposed Btu Tax and Alternatives," DRI/McGraw-Hill, Washington, DC, May 1993.

GDP.[30] The NAM study also assumes the energy tax has an adverse impact on inflation at the same time that it lowers economic output.[31]

It is curious that the Federal Reserve Board would tighten monetary policy as a means to offset a very modest energy price increase — especially one that is phased in over a number of years. A review of past policies and actions of the Federal Reserve Board indicates that it does not act quite so lightly. In fact the Federal Reserve Board is likely to support monetary accommodation if economic growth falters in response to new taxes (or other actions).

Neither is it clear that inflationary pressures will actually move in a lock-step relationship with higher energy prices. In other words, as the energy tax begins to reduce discretionary income, the demand for consumer goods will also be reduced. This means that lower consumer and business demand should offset to some degree the inflationary effect of higher energy prices. It is further unclear whether the DRI/API/NAM studies reflect the influence of downward pressure in prices resulting from lower demand for energy, especially on the price of oil.[32] If not, then it is likely that these studies overstate the economic drag created by an energy tax.

Another problem with the NAM and API studies is that they appear to downplay or ignore the economic benefits resulting from induced energy savings. As explained above, economic theory and empirical studies suggest that the energy tax will induce a small reduction in national energy use. This energy savings in turn will reduce the impact of the tax on consumers' energy bills, and produce net economic benefits by increasing energy productivity throughout the economy. Moreover, if adoption of the energy tax sparks broader energy efficiency efforts or investments, the entire energy tax could be offset by reductions in energy use.[33]

It also appears that the DRI/API/NAM analysis treats government expenditures as a sinkhole, and that funds which do not directly reduce the deficit are wasted expenditures. Yet, the multiplier effects of government expenditures can generate a significant level of economic activity. While the revenues raised from taxpayers represent a decrease in discretionary income, the money is, in fact, respent in other sectors of the economy.

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30. See, for example, Roger E. Brinner, et al., "Optimizing Tax Strategies to Reduce Greenhouse Gases Without Curtailing Growth,", DRI/McGraw-Hill, Lexington, MA. While there is no date for this paper, it appears to have been completed for the U.S. Environmental Protection Agency in late 1991 or early 1992.

31. See especially, Table I of the Appendix to the "Testimony of Paul Huard," op. cit.

32. This is one result of a recent study published in support of the Bush Administration's National Energy Strategy. See, Energy Information Administration, *Energy Consumption and Conservation Potential: Supporting Analysis for the National Energy Strategy*, Washington, DC, U.S. Department of Energy, 1990.

33. As discussed by Howard Geller, John DeCicco, and Steven Nadel, op. cit.; and David Morris, Michael Lewis, Irshad Ahmed and John Bailey, "Beating the BTU Tax: The 6 Percent Solution, Institute for Local Self-Reliance, Washington, DC, May 1993.

Since it appears this positive impact was ignored in the DRI/API/NAM analysis, it is likely the negative impacts are again overstated.

VII. Conclusions

Based upon this analysis, the following conclusions seem to emerge:

1. The modest energy tax proposed by the Clinton Administration should by itself result in a small but non-trivial reduction in energy demand. Based on historic experience and assumptions currently used by the U.S. Department of Energy in its energy forecasts, we estimate that the energy tax will reduce national energy consumption by no more than about two percent early in the next century (i.e., 5-10 years after the tax is fully phased in).

2. Even if all the energy tax revenue is devoted to deficit reduction, the proposed energy tax will not necessarily reduce national income or employment. First, the direct energy savings will dampen the impact of the energy tax on consumers' energy bills. Second, because of the induced energy conservation, the tax will shift economic activity towards sectors of the economy that support more jobs and income than do the energy industries. We estimate that the proposed tax could have a very small **positive** impact on employment and income nationwide by 2003, with a net increase of about 40,000 jobs and $2.3 billion of additional income.

3. The positive impacts on employment and income could be greatly increased if Federal energy efficiency efforts are expanded at the same time that the tax is phased in. By retrofitting Federal buildings, increasing funding for R&D, technical assistance, and home weatherization programs, expanding voluntary energy efficiency efforts, adopting tougher efficiency standards, and taking similar actions, the Federal government can leverage private capital and produce energy savings that more than offset the proposed energy tax. By making the economy more energy-efficient while implementing the proposed energy tax, a net **increase** of approximately 563,000 jobs could result by 2003.

4. Our results differ from those presented by opponents of the energy tax, who claim the tax will adversely affect jobs and the economy as a whole. Opponents of the tax, such as the American Petroleum Institute and the National Association of Manufacturers, have not fully explained their analytical methodology and assumptions. But these organizations appear to be making a series of questionable assumptions and omissions that lead to their negative results.

TABLE 1

PROPOSED ENERGY EFFICIENCY INITIATIVES (1)

LOW-INCOME WEATHERIZATION

Increase the Federal Weatherization Assistance Program by $500 million per year. Energy savings by 2003 - 0.15 Quads/yr.

PUBLIC HOUSING RETROFITS

Devote $400 million per year to retrofitting HUD-assisted housing. Energy savings by 2003 - 0.28 Quads/yr.

RETROFITS OF FEDERAL BUILDINGS

Devote $300 million per year to upgrading the energy performance of Federally-owned buildings. Energy savings by 2003 - 0.21 Quads/yr.

WEATHERIZATION LOAN PROGRAM

Allocate $400 million per year to state-based low-interest loan programs for housing retrofits by middle-income homeowners. Energy savings by 2003 - 0.70 Quads/yr.

SUPPORT BUILDING CODE ADOPTION AND IMPLEMENTATION

Provide $25 million per year for state-level building code adoption, training, and compliance efforts. Energy savings by 2003 - 0.50 Quads/yr.

EXPAND THE EPA "GREEN PROGRAMS"

Increase funding to $150 million per year for programs that promote voluntary manufacture of energy-efficient products and installation of energy efficiency measures. Energy savings by 2003 - 3.59 Quads/yr.

EXPAND RD&D ON IMPROVED EQUIPMENT EFFICIENCY

Increase Federal funding by $50 million per year for research, development and demonstration of new energy savings technologies, with matching funding from the private sector. Energy savings by 2003 - 0.67 Quads/yr.

TABLE 1 (cont.)

PROPOSED ENERGY EFFICIENCY INITIATIVES (1)

UNDERTAKE INDUSTRIAL ENERGY EFFICIENCY INITIATIVES

Provide $500 million per year for technical assistance, loan guarantees and interest rate buydowns, voluntary programs, and demonstration of innovative industrial process improvements. Energy savings by 2003 - 2.34 Quads/yr.

PROVIDE INVESTMENT ASSISTANCE TO VEHICLE MANUFACTURERS AND STRENGTHEN FUEL ECONOMY STANDARDS

Provide up to $2 billion per year to auto manufacturers for investments needed to make cars and light trucks more energy efficient, coupled with tougher fuel economy standards. Energy savings by 2003 - 2.64 Quads/yr.

LEVELIZE TAX BENEFITS FOR COMMUTERS

Permit and require employers to offer the same tax-free benefit to commuters who drive cars, use mass transit, or other use other non-automobile-based transport modes. Energy savings by 2003 - 0.15 Quads/yr.

(1) Funding levels refer to programs at full phase in.

Source: H. Geller, J. DeCicco, and S. Nadel, "Structuring an Energy Tax So That Energy Bills Do Not Increase", American Council for an Energy-Efficient Economy, Washington, DC, March 1993.

Table 2. U.S. Economic Multipliers by End-Use Sector

Sector	Jobs (Total Per Million $ Expenditure)	Earnings (Wages and Salaries Per Dollar of Expenditure)
Residential	29.5	0.62
Commercial	48.0	0.99
Industrial	35.1	0.83
Energy	17.7	0.46
Efficiency Investment	41.7	0.98
Government	32.0	0.76

Notes: The total jobs and income multipliers shown in Table 2 include the direct, indirect and induced effects of each change in consumer spending. A more complete discussion of these numbers is found in the Bureau of Economic Analysis handbook, *Regional Multipliers*, U.S. Department of Commerce, Washington, DC, 1992.

Table 3. Energy Consumption in 2003 Under Different Tax Scenarios

Sector	Baseline	Tax-Only	Tax-Recycling
Residential	16,955	16,753 (1.2)	15,574 (8.1)
Commercial	13,899	13,709 (1.4)	11,673 (16.0)
Industrial	34,476	33,670 (2.3)	29,567 (14.2)
Transportation	26,766	26,227 (2.0)	23,641 (11.7)
Total	92,096	90,360 (1.9)	80,455 (12.6)

Notes: Data are in trillions of Btus. Figures in parentheses reflect percent change over the baseline scenario.

Source: Baseline data are derived from the *Annual Energy Outlook 1993*. The tax-only and tax-recycling Scenarios are calculated by the American Council for an Energy-Efficient Economy.

Table 4. Summary of Year 2003 Energy Tax Impacts

Impact	Tax-Only	Tax-Recycling
Effective Tax Rate ($/MBtu)	$0.396	$0.396
Energy Price Increase (Percent)	5.69	5.69
Price-Induced Energy Savings (Quads)	1.7	1.7
Efficiency Energy Savings (Quads)	0.0	9.9
Total Energy Savings (Quads)	1.7	11.6
Tax Revenues (million 1991$)	$35,700	$31,900
Federal Efficiency Expenditures (million 1991$)	$0	$4,500
Private Efficiency Expenditures (million 1991$)	$0	$18,600
Net Energy Bill Savings (million 1991$)	$11,900	$75,900
Net Consumer Savings (million 1991$)	-$23,800	$29,900
Net Job Impact (actual)	39,000	563,000
Net Earnings Impact (million 1991$)	$2,300	$13,900

Table 5. Summary of 2003 Impacts By Level of Price Elasticity

Impact	Low Elasticity (-0.20)		Mid-Elasticity (-0.33)		High Elasticity (-0.50)	
	Tax-Only	Tax-Recycling	Tax-Only	Tax-Recycling	Tax-Only	Tax-Recycling
Energy Savings (%)	1.2	11.9	1.9	12.6	2.9	13.6
Net Jobs (Actual)	3,000	526,000	39,000	563,000	90,000	615,000
Net Earnings (million 1991$)	$1,400	$13,100	$2,300	-$13,900	$3,400	$15,000

Source: Calculations by the American Council for an Energy Efficient Economy as referenced in the main report.

Thousands of refugees have been relocated on short notice to the new prefab villages or less comfortable army barracks over the protest of the Bosnian Embassy.

Tensions between the huge Muslim refugee population—at least 70 percent of the total—and Croatians have increased, partly because of the recent eruption of warfare in central and southwestern Bosnia between Croats and Muslims, erstwhile allies against the Serbs.

Vladimir Seks, Croatia's vice prime minister, recently hinted that Bosnian Muslim refugees might no longer be welcome because of the Muslim-Croat fighting in Bosnia. But Croatian Foreign Minister Mate Granic, seeking to ease international concern, said late last month that there would be no change in Croatia's "open-border policy."

"Croatia is the only European country whose borders are still open," he said.

U.N. officials say that, in fact, Croatia continues to take in thousands of Bosnian Croat refugees—with no questions asked—and that as of late June, there has been only one case of Bosnian Muslims being deported to Bosnia. U.N. officials intervened to stop it.

Still, Croatia clearly has a double policy toward Bosnian refugees—one for Croats and another for Muslims. Muslims can only enter Croatia with a transit visa for passage to a third country, and do not benefit from government subsidies. Croats, on the other hand, are treated almost like full-fledged Croatian citizens and can get passports relatively easily.

But the plight of Muslim and Croat refugees alike seems remarkably similar in the telling. Take, for instance, the two cases of Beslagic and Tomic.

Both have found the same accommodations in the Kutina resettlement camp, a prefab village with new paved roads and fresh landscaping that houses 1,400 people in 105 specially insulated homes. The camp was built by the Danish Red Cross at a cost of $7.5 million, and the Danes have promised to pay all costs—rent, water and electricity—for at least two years and possibly longer.

But nobody is helping either Beslagic, a butcher by trade, or Tomic, a miner, to get work permits, a loan or a job, or to become integrated into the community of Kutina.

Beslagic, the Muslim, said he has found only piecemeal work lasting a day or so at a time. "The problem is for everybody, not just Muslims. There is no work," he said.

Asked if he thought about going to Germany or Austria to look for employment, Beslagic replied: "I'd like to go immediately, but nobody helps us."

Tomic said he had to sign 12 documents forfeiting all rights to his home and property in Bosnia, and to pay nearly $200 in German marks to the Serbs before he could leave his village. He said he had been granted a visa for Germany, but that the Serbs had torn it up as he left Bosnia. "The Serbs took everything at the final checkpoint, even my money," he said.

Like Beslagic, Tomic complained of the difficulty of finding a steady job in economically depressed Croatia. "A job is the most important thing," he remarked wistfully.

Both men complained of the difficulty of getting new identity documents to start life over again in Croatia. "The problem is always [identity] papers. Papers, papers, papers—you need papers for everything," Tomic said.

In Karlovac, 25 miles southwest of Zagreb, displaced Croats in the "Gaza" resettlement village, built with German aid, voiced many of the same complaints, particularly about the lack of job possibilities.

Nikola Jurasin, 43, the village director, said the problem of finding jobs was particularly difficult on most of the 2,300 displaced persons housed there. They are rural people from the Serb-occupied Krajina region of Croatia who found it difficult to adapt to "city life," Jurasin said.

Milan Jurcic, a Krajina farmer who boasted that he once owned nearly 45 acres, 20 pigs, eight cows and a tractor, readily agreed.

"It's unclean, the climate is different and it's boring here. So we go to the woods to clear out the brush to pass away the time," he said.

The government pays him $3.30 a day for his labors.

Jurcic's prefab two-room home, where he lives with his wife, son, daughter-in-law and their two children, was surrounded with rows of onions, lettuce, tomatoes and peppers, as if he were determined to bring his farm back to life in the city soil of Karlovac.

"It would be better if we got back to our land. Then nobody would have to give us money," he said. "If we were back on our land now, the orchards would be full of fruit, enough to last until winter."

If life for refugees in Croatia is bleak, it is no better for them even in a relatively rich European country like Austria that has shown considerable sympathy for their plight—at least until recently.

Austria, like Germany, has a system in which the federal government parcels out refugees among the provinces to find places for them in the homes of Austrians—who are paid $130 per refugee per month—and in churches and other welfare centers.

Austria has officially registered 47,000 Bosnians, but Austrian officials say the number is really closer to 67,000 to 70,000. Austria is one of the last European countries that does not require Bosnians to have visas. But there is a bureaucratic catch that is acting as a brake on immigration: the principal transit countries, Hungary and Slovenia, require proof of a visa in a third country before they will issue transit papers.

Austria's main refugee reception center is in a big former World War II army school at Traiskirchen, a small town 15 miles south of Vienna. Otto Grunauer, the official in charge of the Bosnian program, said many of the Bosnians were obliged to pay anywhere from more than $450 to nearly $1,200 in marks to entrepreneuers to arrange the necessary transit visas across Croatia, Hungary or Slovenia.

"When they finally get here, they have no money. That's for sure," he said.

The Traiskirchen center is home to 550 Bosnian refugees, who get free room and board—but no cigarettes and coffee—and help in looking for scarce jobs. So far, the center has been able to find full-time employ ent and work permits for only 14 of the Bosnians.

Still, a survey conducted nine months ago found that only 28 percent of the residents expected to ever return home to Bosnia. "Austria expects they will probably stay," Grunauer said.

Jadranka Hadzalic, a mixed Serb-Croat married to a Muslim and mother of two teenagers, was depressed about the prospects of ever returning home, and ever finding happiness in Austria.

"All the people in my country are killing each other. Why? I don't know. It's a political war, but everyone tries to make it an ethnic war. It's no life for me and my family," she said.

But, she added, living in a refugee center cannot be called "life," either. "It's more like living in a big waiting room.

"I don't have papers. So nobody gives me a job. . . . There are a lot of families where nobody works. . . . I like Austria but I'd like to be in my own home. . . . This is not life."

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Combination Fuel-Utility Tax Gaining Support on Hill

By Eric Pianin
Washington Post Staff Writer

As House and Senate negotiators begin work on a compromise budget package, a proposal that would combine an increase in the gasoline tax with a new tax on consumers' utility bills appears to be gaining momentum on Capitol Hill.

House Ways and Means Committee Chairman Dan Rostenkowski (D-Ill.), a key player in the negotiations, has offered the proposal as a means of settling one of the thorniest issues dividing the two chambers.

The House-passed bill contains President Clinton's original broad-based "Btu" energy tax proposal designed to raise $72 billion over five years, while the Senate version contains a much narrower gasoline and transportation fuels tax that would generate $23 billion.

Sen. Max Baucus (D-Mont.), a member of the Senate Finance Committee who has criticized the Senate's gasoline tax, said yesterday that Rostenkowski's proposal, combining elements of the gas tax and the Btu tax, represents a move "in the right direction because he's trying to achieve balance."

Rep. Bill Richardson (D-N.M.), a member of the House Democratic leadership, said that some members returning from the July 4th recess have voiced support for Rostenkowski's approach.

"The feedback early on is slightly encouraging," he said. "I think this may be a way out of this thicket," said Rep. Robert T. Matsui (D-Calif.), a member of the Ways and Means Committee.

The leadership will have a clearer idea after House Democrats voice their views on the budget and deficit reduction package at a caucus scheduled for this morning.

House and Senate Democrats agree that the Btu tax is dead because of strong opposition from oil and gas producers and a coaliton of business and industry groups. But there is considerable disagreement over a suitable replacement that would generate the revenue necessary to bring down the deficit while satisfying regional, economic and "tax equity" concerns.

One problem in gauging support for Rostenkowski's proposal is that the chairman has provided few details.

It is not clear, for example, whether the proposed utility tax would be applied only to consumers' electric, natural gas and home heating oil bills or whether it would be broadened to include industry, commerce and agriculture.

It is also unclear how big a gas tax Rostenkowski would seek.

The Senate bill would raise the current 14.1 cents-per-gallon tax on gas by 4.3 cents, but the House-passed Btu tax would raise the gasoline tax by nearly 8 cents per gallon. In the past, House members have been reluctant to boost the gas tax, even by a nickel, but this time, House negotiators might insist on the higher rate.

The White House yesterday denied a report that it was actively discussing a 10 cents-per-gallon gasoline tax as an alternative to the Btu tax and the Senate's smaller fuels tax. According to the report by the Bureau of National Affairs Inc., White House economic adviser Robert Rubin outlined the plan in a staff paper. But Gene Sperling, a Rubin deputy, said, "It never happened."

"That's out of a question," said another senior official, noting such a tax increase runs counter to White House pledges not to affect one region disproportionately over another and Clinton's aversion to the gas tax in the campaign. The White House did not rule out some level of gas tax increase, however.

According to an analysis by Energy Market & Policy Analysis Inc., a 6 cents-per-gallon transportation fuels tax and the equivalent of a 26.8 cents-per-million Btu tax on residential energy use would yield $12.9 billion a year, or $64.5 billion over five years.

The combined tax would cost the average household $137 a year, according to the analysis, but would hit some families much harder.

For instance, the average added tax burden for a family in Wyoming would be $242 a year, while the average household in Connecticut would pay $121 a year and the average District of Columbia household would pay only $86.

The House- and Senate-passed bills would achieve roughly $500 billion in deficit reduction over five years. However, Sen. John Breaux (D-La.), a Finance Committee member, suggested that Democrats lower their sights to $400 billion in deficit reduction to avert having to impose any type of energy tax and to avoid making unpopular spending cuts.

"I don't think a lot of people back home are going to say, 'By golly, it should have been 500 instead of 400,' " Breaux said.

Staff writer Ann Devroy contributed to this report.

DEPARTMENT OF THE TREASURY
OFFICE OF TAX ANALYSIS

1500 Pennsylvania Avenue, N.W.
Washington, D.C. 20220

Number of pages: 11 cover DATE: 6/15/93

TO: Greg Simon | 456-6231 | 456-6222
Name | FAX number | Confirmation number

FROM: Jim Nunns | 622-1328
Name | Phone number

Sender's FAX number: 202/622-0236 Location: Room 4112MT

Sender's Confirmation Number: 202/622-2659

Comments/Special Instructions: Attached is the revised distribution for the option w/ a 4¢/gal transportation fuels tx. The unit rate is equivalent to $0.14/MMBtu. Both parts raise $20B over the FY1994-98 period.

UNCLASSIFIED

Transportation Fuels of 4 Cents/Gallon and Broad-Based Unit Energy Tax on Other Fuels
(With Manufacturers' and Farmers' Exemption for Tax in Excess of 0.2% of Costs)

Census Region	Tax Increase		Percent of National Average	
	Amount Per Capita	As a Percent of Income	Amount Per Capita	As a Percent of Income
lew England	$57	0.26%	108%	91%
liddle Atlantic	54	0.26	102	89
outh Atlantic	54	0.29	101	103
ast North Central	54	0.30	101	103
ast South Central	50	0.33	94	114
Vest North Central	54	0.31	102	108
Vest South Central	52	0.32	97	113
lountain	51	0.31	96	108
acific	52	0.26	98	92

June 15, 1993

Senate Searches for an Alternative to B.T.U. Tax

To: Greg Simon
From: Mack
6/12

By STEVEN GREENHOUSE
Special to The New York Times

WASHINGTON, June 11 — As it seeks to find a replacement for the Administration's B.T.U. tax, the Senate is struggling to choose the least ugly of several alternatives.

It has quickly discovered that every option has somebody ready to loathe it.

Westerners who drive a lot hate the idea of a gasoline tax.

Truck drivers and struggling airlines have dragged out the heavy artillery to shoot down the leading proposal, a broad transportation tax on gasoline, diesel fuel and airline fuel.

Environmentalists dread another idea — a sales tax on energy — because coal, which is dirty, is also cheap. They want a tax that penalizes coal rather than favors it. Besides, Senators from the Northeast dislike an energy sales tax because it would hit their region disproportionately since its electricity and energy prices are among the highest in the nation.

Looking For Right Tax

As so often happens in Congress, the selection process appears to be boiling down to the tax that has the fewest, weakest, least vocal opponents.

But this time there are two other factors complicating the muddle, with environmentalists looking for the tax that will help the environment most, and economists looking for the tax that will hurt the economy least.

On that last point, there seems to be wide agreement.

After cutting through all the lobbyists' talk about how such-and-such energy tax will send such-and-such industry back to the Jurassic Age, economists say that a gasoline tax or transportation tax would do less overall damage to the economy than the B.T.U. tax that the Administration trumpeted, and then withdrew.

The reason is that while the B.T.U. tax and the gasoline tax would each hurt consumers by raising the price of gasoline, the B.T.U. tax would hurt many industries — and would endanger them in international competition. The B.T.U. tax would be levied on nonrenewable energy sources and be based on the heat content of different fuels as measured in British thermal units.

"A straight gasoline tax has a much smaller impact on the nation's manufacturing sector," said Philip Verleger, an energy economist at the Institute for International Economics. "But with a B.T.U. tax, there would be substantial job losses in the energy-intensive sector."

Environmentalists, on the other hand, are unhappy that the B.T.U. tax has been set aside. They like it because it would help shift consumption away from dirty fuels and toward cleaner ones, like natural gas.

"If you compare the environmental benefits per dollar, a gasoline tax is just half as effective as a B.T.U. tax," said Daniel A. Lashof, a senior scientist with the Natural Resources Defense Council. "The B.T.U. tax creates an incentive to switch from coal to natural gas."

The energy tax that environmentalists really love — a carbon tax, based on the amount of carbon dioxide produced by burning each unit of fuel — is not even being considered by the Senate. The reason: it would hit coal country hardest, and Robert C. Byrd, the powerful Democratic Senator from West Virginia, would not want that.

The Administration's B.T.U. tax died of 1,000 pinpricks after the National Association of Manufacturers, American Petroleum Institute, American Chamber of Commerce and dozens of other lobbying groups organized to kill it. Because there was so much unhappiness that the tax would hurt manufacturers, several Senators concluded that an energy tax that emphasized consumers would have a better chance of passage.

Thus, Senator John B. Breaux, a Louisiana Democrat, is pushing a transportation tax on airline fuel, diesel fuel and gasoline. Under one version, it would raise the price of gasoline by 7.6 cents a gallon, about the same amount as the Administration's B.T.U. tax. When fully phased in, the B.T.U. tax would raise more than $20 billion a year, while Mr. Breaux's transportation tax would raise less than half that.

Speaking about a 7.6 cent tax on gasoline, William Durbin, associate director of Cambridge Energy Research Associates, said: "A tax that size will only have a marginal impact on the economy. We often see fluctuations of eight-nine cents in the price of gasoline. An increase of eight or nine cents means nothing. In some European countries, the gasoline tax is over $4 a gallon."

Nonetheless, Senator Max Baucus, a Montana Democrat on the Senate Finance Committee, opposes a gasoline tax, saying it would unfairly penalize Montanans who have to drive long distances. According to Resources for the Future, an environmental group, Mr. Breaux's gasoline tax would cost households in the Southwest and Rocky Mountain states about $100 a year, while costing Middle Atlantic households $75 a year.

"There are a lot of suburbanites on the East Coast who drive long distance to work, and they would probably face the same burden as people in Western states," Mr. Durbin said.

The Democrats on the Senate Finance Committee met for several hours today as Senators took potshots at competing energy plans. They broke for the weekend still divided over what shape the energy tax should take and where spending cuts could be found. The chairman, Daniel Patrick Moynihan of New York, said he expected a consensus could be reached when the Democratic Senators reconvene on Tuesday.

For the committee to approve a bill, the Democrats must stick together. They have a majority of only 11 to 9, and all the Republicans have vowed to vote against the legislation.

Some form of tax on transportation fuels and spending cuts in Medicare still seem likely to be approved. Senators John D. Rockefeller 4th of West Virginia and Donald W. Riegle Jr. of Michigan said they could not support cuts in Medicare much deeper than the $50 billion over five years that the Clinton Administration has proposed.

One advantage of Mr. Breaux's proposed tax over a B.T.U. tax is that it would be far cheaper to administer. All it would take would be to increase existing fuel taxes, while administrating the B.T.U. tax would require a huge new apparatus, which some economists say could cost $10 billion a year.

The Administration ruled out a gasoline tax early on, convinced that it would be unfair to rural states. Treasury Secretary Lloyd Bentsen favored a sales tax, known as an ad valorem tax, which would be inexpensive to administer. But Vice President Al Gore persuaded the Administration to put forward the B.T.U. tax because it would be better for the environment.

Some economists favor combining a gasoline tax, which favors the densely populated East, where mass transit is more common, with a straight sales tax on energy, which would favor the West, where energy prices are cheaper. The Northwest would benefit disproportionately from a straight sales tax because hydroelectricty gives the region low-cost power.

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Number of pages: 2+cover DATE: 6/14/93

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Name | FAX number | Confirmation number

FROM: Jim Nunns | 622-1328
Name | Phone number

Sender's FAX number: 202/622-0236 Location: Room 4112MT

Sender's Confirmation Number: 202/622-2659

Comments/Special Instructions: Attached a description + regional distribution. unit rate is equivalent to $.10/mmBtu. We'll do option w/ 44 trans. fuels tt tomorrow.

UNCLASSIFIED

Proposal

1. $.04 per gallon motor fuel excise tax under current system including existing exemptions.

2. Special excise tax levied per unit of fuel as shown in accompanying chart. Tax would be levied:
   - at the terminal rack for petroleum products*
   - at the meter (burner tip) for electricity and natural gas
   - at the delivery point for coal not used for electricity.

3. Electricity rates can be calculated based on:
   - fuel mix used by utility, OR
   - national average of fuel mix, OR
   - other formula to be negotiated.

4. Manufacturers' tax liability is capped at 0.2% of production cost.

5. $.50 per barrel levy on imported oil delivered by single-hull tankers.

6. Manufacturers' capital investment can offset tax dollar for dollar.

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* other than motor fuels that are subject to the $.04 excise tax

Talking Points on Energy Tax Alternative

By blending a small motor fuels excise tax with a small broad based energy tax, we can achieve a fair distribution of the tax burden -- both geographically and between consumers and business. The environmental benefits of the tax can be retained, and appropriate adjustments can keep U.S. manufacturers competitive.

The broad based energy tax component would be levied on the basis of commonly transacted quantities at the point of end-use, e.g. the burner tip for gas, the meter for electric, and the terminal rack for petroleum products. Fuels used to generate electricity for sale would be exempt, and a retail electricity tax could be based on the fuel mix used by the utility.

To maintain competitiveness, we could cap energy tax liabilities at 0.2 percent of production costs. In addition, or as an alternative, new investment could offset energy tax liability on a dollar-for-dollar basis (or at a negotiated rate). This would provide companies with the option of "investing their way out of the tax." This would provide significant tax relief, preserve the conservation incentives, and stimulate investment.

A $0.50 per barrel fee on oil imported in single-hull tankers would provide an environmental benefit and also help domestic producers.

A motor fuels tax of 4¢ per gallon would provide additional revenue that would not burden farmers, since they are exempt under the current tax system.

This proposal retains the best features of the broad based energy tax -- fairness -- while also providing environmental and national security benefits for the country.

Energy Product	Unit	House Bill - Per Unit Fully Phased-in Tax Rate ($/unit)	Alternative Proposal	Change Per Unit
Natural Gas	000 mcf	$ 0.28	$ 0.17	$ - 0.11
Coal:	short ton			
Anthracite		4.27	2.61	- 1.66
Bituminous		6.41	3.92	- 2.49
Subbituminous		4.67	2.86	- 1.81
Lignite		3.42	2.09	- 1.33
Electricity:	000 kWh			
Hydro-generated		2.77	1.69	- 1.08
Nuclear-generated		2.77	1.69	- 1.08
Fossil fuel-generated		2.95	1.69	- 1.26
Petroleum Products:	barrel			
Aviation gasoline		3.08	0.83	- 2.25
Motor gasoline		3.21	0.86	- 2.35
Kerosene-type jet fuel		3.46	0.93	- 2.53
Naptha-type jet fuel		3.27	0.88	- 2.39
Distillate fuel oil (motor fuel)		3.57	0.96	- 2.61
Distillate fuel oil (space heating)		1.57	0.96	- 0.61
Kerosene		3.46	0.93	- 2.53
Residual fuel oil		3.96	1.06	- 2.90
Petroleum coke		3.67	0.99	- 2.68
Ethanol		2.14	0.57	- 1.57
Methanol		2.14	0.57	- 1.57
Butane		1.16	0.71	- 0.45
Propane		1.03	0.63	- 0.40

THE WHITE HOUSE

WASHINGTON

June 9, 1993

MEMORANDUM TO THE VICE PRESIDENT

FROM: Marc Chupka

cc: Katie McGinty
Greg Simon

SUBJECT: Alternative Energy Taxes

You have asked for energy tax options under the following guidelines:

- o Raise **$50 billion** over five years;
- o From a **broad tax base** of energy sources, which means;
- o **Not a "gasoline" tax;**
- o The tax should **promote conservation;**
- o The tax should **promote shifts toward cleaner fuels;**
- o The tax is **not a Btu tax;** and
- o The tax is **not a carbon tax.**

This doesn't leave too much room to maneuver, unless we accept the possibility of a totally arbitrary set of tax rates and collection points without a unifying theme or a common unit of measurement for the tax base. But, since our current tax is already fairly contorted from exemptions and various Btu rates for a myriad of energy sources, arbitrariness may not be a factor at this point. However, an arbitrary set of tax rates will hurt some energy interests compared to the current tax -- alternatives must be viewed as a way to gain support on Senate Finance and not a panacea for obtaining all of our objectives (we would have proposed a better tax if we knew of one). There are two additional criteria that probably should be met:

- o The tax promotes natural gas (the cleanest fuel);
- o The tax would not put our energy intensive industries at a disadvantage.

The press reported yesterday that a tax based on market value (an ad valorem tax) is being considered. This is a problem because an ad valorem tax would favor coal (it is the cheapest fuel on a Btu basis) and hit natural gas harder. An ad valorem tax would hit petroluem the hardest, since it is the highest priced fuel (Btu basis) at the point of end-use. If energy were taxed across the board at a 4% rate (fully phased in) -- including electricity -- this would be consistent with raising about $50 billion net taxes over five years.

SUGGESTED ALTERNATIVE: Combine a per-unit tax on natural gas, petroleum, and coal with an additional 3¢ per gallon motor fuels tax. Even if the tax rates were roughly based on Btu content, it would be close to what we have now -- since the supplemental rate on petroleum products has been stripped away from so many products, leaving motor fuels about the only energy product taxed at a higher rate. For electricity, hold onto the utility-by utility basis for tax calculation (calculated under the new fossil fuel tax rates). This means that renewables are exempt we could preserve the incentive to shift toward natural gas.

Even if we use a Btu-basis for calculating the tax, we can avoid casting the tax as levied on a Btu basis by expressing the basic rates in terms of conventional units -- a uniform tax on a ton of coal, a tax on petroleum products on a per volume (barrel) rate, and the tax on natural gas on a $ per thousand cubic feet (mcf) basis. We can adjust the tax rates any way we want to slightly favor natural gas over coal. The additional motor fuel tax would give a little push away from petroleum in the transportation sector.

A per-ton tax on coal at roughly $4 per ton would be consistent with a broad-based tax that would raise $50 billion over five years. Different grades of coal -- anthracite, bituminous, subbituminous, and lignite should be taxed at different rates to reflect approximate heat content.

Express the tax on petroleum on a per barrel rate for refined products. We could gain some additional revenues if we add a very modest environmental tariff for imported petroleum shipped in single hull tankers (the revenue could go into a coastal management trust fund). This is probably GATT legal -- to levy a fee based on the environmental risks of oil transport, and not hurt our domestic producers since the tankers that deliver oil to California from Alaska are mostly double-hulled. This should really get oil producing states support (its like a small oil import fee) and may even garner environmental support. I know that Rep. Stark has considered floating such a proposal. If we keep the environmental tariff low -- say 50¢ per barrel, it will not cause the economic disruption as is the case with using an oil import fee to generate all of our revenues.

The current supplemental rate on petroleum could be preserved by raising the motor fuels tax by about 3¢ per gallon. Since on-farm diesel and gasoline are already exempt from this tax, it would automatically exempt farm use from the extra motor fuels tax. Thus, a farm exemption would be built in to the supplemental tax.

For natural gas, give a straight dollar per thousand cubic feet rate -- based on Btu but maybe a break compared with Btu formulation (not too much to make it a carbon tax -- so that

we don't lose coal state support.)

Electricity tax should be based on the fuel input as currently configured in the House bill - i.e. the tax is levied at the consumer's meter based on the utility's estimated liability under the new set of fuel taxes. It will be hard to hold the line on this formula -- the urge to substitute a national average electricity rate will be very strong. We could maybe settle for an average rate if a credit for renewable generation (to the customer, not the utility) is granted. This would mean that the electricity tax rates would still be calculated on a utility-by-utility basis but would not distinguish among fossil fuels. Alternatively, we could expand renewable electricity tax credits for new renewable generation, or extend the credit system under the Energy Policy Act, which has a renewable credit that phases out over time.

To protect energy intensive industries, we could offer a limited investment tax credit that can be credited only against energy tax liability. Energy intensive industries are also capital intensive. An ITC can give needed tax relief and stimulate new investment in energy efficient capital. By scaling the ITC to energy use, we could keep the incentive to conserve but lower the cost of capital to energy intensive industries. This concept could stimulate investment and conservation at the same time. Plus, it would offer real relief -- industries can invest their way out of the tax -- as opposed to a cap on energy tax liability that eliminates the marginal incentive to conserve. The ITC should not be available for energy producers or electric generators -- they have already passed the tax on -- but only for those who have tax liabilities under the end-use tax.

This proposal requires a lot of additional analysis -- to figure what kinds of rates would be environmentally sound and generate the required revenues. However, if we break the explicit link between Btu content and fossil fuel taxes, it may satisfy the political requirements. We are likely to lose some environmental support unless the tax is tilted heavily toward carbon-intensive energy. However, a gentle tilt from the current formula may still hold the environmental groups. Expressing the tax on a simple per-unit basis as opposed to the Btu basis will make the tax appear a bit more simple, and doesn't foreclose adjusting individual rates to enhance the environmental benefits. Converting some of the tax to a straight motor fuels tax would probably go some distance to mollifying those who want to turn the whole tax into a gasoline tax -- but would be more broad based.

Substitute broad-based energy tax

Tax fossil fuels at rates expressed in $/unit -- say $5/ton of coal, $2/bbl of refined petroleum product, and 15¢/thousand cubic feet of natural gas. Start with a Btu-based rate, then adjust unit tax rates to maintain environmental goals (lighten up slightly on natural gas, increase slightly on coal). Eliminate the oil supplement.

Point of collection

Collect tax at the terminal rack for petroleum products, the point of delivery for coal (except coal used to generate electricity for sale) and the burner tip for natural gas (except gas used to generate electricity for sale).

Tax electricity at the customer meter. Possible variants:

- Calculate utility-by-utility rate based on implicit fuel consumption tax (Ways and Means approach)

- Use a national average with utility-by-utility adjustment for renewable generation (no fossil fuel switching incentives).

- Use a straight national average, expand or extend the renewable electric production credit in the Energy Policy Act (the current credit phases out over ten (?) years).

Options for Oil:

- Convert existing oil supplement to a 3¢ per gallon motor fuels tax. We're practically there now with the oil supplement stripped away from most petroleum products -- but this will give political benefit to those who have argued to change the whole tax into a gasoline tax. Farm use is already exempt from this tax. Will simplify the oil tax.

- Add a modest environmental fee for oil imported in single-hull tankers ($0.50 per barrel). This will not impact Alaska - California (mostly double hulled), will probably be GATT legal, and provide a slight boost to domestic oil production.

Energy Intensive Industries

To protect energy intensive industries, allow an investment tax credit up to the level of energy tax liability. This would enhance the conservation incentive (new equipment is generally more efficient), limit treasury losses, lower capital costs for capital and energy intensive industries, and deal with the competitiveness issue. While it may be a windfall for some industries, at least we make the firms invest their way out of the tax, and it may stimulate some additional investment at the margin. This is a novel idea that could get industry and environmental support.

Other Energy Sources

Tax methanol and ethanol at (roughly) the natural gas rate, but exempt them from motor fuel tax.

Tax hydroelectricity at a rate consistent with state-of-the-art (combined cycle) natural gas generation rate (8,500 btu/kWh x our natural gas tax in $/Btu). This is a break from existing implied hydro rate (about 10,300 btu/kWh) but will give Western states a bit of an edge, and maybe prevent a huge exemption from developing (e.g. a 3,500 btu/kWh rate based on implied mechanical efficiency).

July 10, 1993

MEMORANDUM

TO: MARK CHUPKA
GREG SIMON
FROM: MIKE NELSON
RE: SELLING THE ENERGY TAX

As the House and Senate conferees struggle to reconcile their two conflicting versions of the energy tax, the Administration may have an opportunity to craft a broad-based energy tax proportional not to BTUs, but to "energy inefficiency". Properly designed and packaged, such a tax would provide many of the environmental benefits offered by the BTU tax while avoiding much of the public confusion and many of the politically-motivated exemptions generated by the original BTU tax proposal.

The goal of an "inefficiency tax" would tax most those who use fossil fuels least efficiently. Politically, it would have many of the benefits of so-called "sin taxes". How can you be against inefficiency?

It would be nearly impossible to design an accounting system that would tax each individual energy user according to how efficiently they use energy. However, it would be qiote easy to design a system that taxes classes of energy users according to how well they use fossil fuels.

Perhaps the most straight-forward approach would start with a BTU tax where petroleum, natural gas, and different types of coal are taxed according to their heat content. For fuels used to produce electricity (coal and natural gas), part of this tax would be rebated to the user. The rebate would be proportional to the amount of electricity generated and thus more efficient producers would be rewarded.

It will be more difficult, but not impossible, to determine the amount of rebate for fuels derived from oil. In each case, the amount of the rebate would reflect the average efficiency of the end use of the particular product. Thus, makers of gasoline would get a smaller rebate per gallon than makers of jet fuel, which is used more efficiently.

Every two or three years the rebates for variously fuels could be recalculated to reflect increases (or decreases) in how efficiently different fuels are used. Thus, as automakers design and sell automobiles and trucks with more efficient engines, the tax on gasoline and diesel would be reduced.

Besides being easier to sell politically, an inefficiency tax could be designed to spare some of the industries that might be taxed unfairly under a BTU tax. For instance, industries, such as the steel industry and the plastics industry, that use coal and petroleum as feedstock (and not to produce power) could receive a rebate of the BTU tax for feedstock it buys. Such exemptions could be justified since we are taxing inefficiency, not fossil fuel use.

In order to ensure that the Vice President gets his briefing book in a timely and appropriate manner, the briefing book staff will make the following changes effective today:

1.) We will make two books, one of which that will be completed by 7:00 p.m. and delivered to the Vice President at that time, regardless of how complete it is, and another one that he will receive the following morning that will be complete. In the first book we will name the senior policy person and office whose memo is not included.

2.) At the staff meeting next Monday morning, we will convey to the rest of the staff the importance of timeliness in getting their memos in on time.

3.) On speeches, we will continue to include only final speeches in the book as we have been asked. However, we will ask Bob Lehrman to fax speeches directly to the Vice President's residence when they are not available for the first book that is delivered.

4.) We will also make better use of the driver in the morning to get the Vice President memos for early events.

From the Office of the Chief of Staff

Phone: 202/456-6797 Fax: 202/456-1121

Date: 14 July 1993 Response needed by: _____

COS Office Contact: Bill Burton

	Action	FYI		Action	FYI
Joan Baggett			Leon Panetta		
Rahm Emanuel			Howard Paster		
Mark Gearan			John Podesta		
David Gergen			Jack Quinn		
Jack Gibbons			Carol Rasco		
Marcia Hale			Bob Rubin		
Alexis Herman			Eli Segal		
Nancy Hernreich			Ricki Seidman		
Tony Lake			George Stephanopoulos		
Bruce Lindsey			Christine Varney		
Katie McGinty			David Watkins		
Regina Montoya			Maggie Williams		
Dee Dee Myers			Greg Simon		X
Roy Neel					
Bernie Nussbaum					

Remarks:

Response:

American Council for an Energy-Efficient Economy
WASHINGTON, DC / BERKELEY, CA

July 14, 1993 Number of pages: 4

TO: Bill Burton, 456-1121
Heather Ross, 234-2233
Mark Chupka, 456-2710
Barbara Chow, 456-2604
T.J. Glauthier, 395-4639
Phil Deihl, 622-0073
Les Samuels and Sam Sessions, 622-0646
Jim Nunn, 622-0236
Rich Rosenzweig, 586-6210
David Gardiner, 260-0275

FROM: Howard Geller, Executive Director
Skip Laitner, Senior Associate

ACE³ is circulating the enclosed energy tax proposal to conferees and others influential in decisions regarding the deficit reduction package. This proposal, a combination of a transport and utility fuels tax, has the following main features:

o transport fuels (excluing aviation fuel) taxed at 6 cents per gallon ($0.48/MBtu), midway between the tax in the House and Senate bills;

o utility fuels including electricity, natural gas, and home heating oil taxed at $0.27/MBtu, the base rate in the House bill;

o electricity would be taxed based on fuel input for power production in order to promote energy efficiency and not penalize natural gas relative to electricity;

o the utility tax would apply to all consumers -- residential, commercial, and industrial -- to avoid placing all of the tax burden on households;

o an investment tax credit would be offered to manufacturing industries for any investment that reduces energy intensity, capped at a company's energy tax liability.

This proposal meets the multiple objectives of substantial deficit reduction, equity among fuel types, promotion of environmental benefits, and no negative impact on U.S. economic competitiveness. In fact, we project that our energy tax proposal will result in a net increase of 24,000 jobs in the United States. It will also reduce U.S. carbon emissions by about 24 million metric tons, a substantial fraction of the reduction necessary to meet the President's commitment to stabilize U.S. greenhouse gas emissions.

Please contact us if you have any questions or if we can be of further help on this matter.

American Council for an Energy-Efficient Economy
WASHINGTON, DC / BERKELEY, CA

ENERGY TAX PROPOSAL

Howard Geller and Skip Laitner
July 13, 1993

OBJECTIVE

This proposal combines the House and Senate energy taxes in a way that: 1) maximizes tax revenue within the political bounds that now exist, 2) provides for broad coverage without burdening the manufacturing sector, 3) strives for equity among fuel types, and 4) encourages energy efficiency in order to provide economic and environmental benefits.

DESCRIPTION

We suggest combining a transportation fuels tax and a "utility" fuels tax, with utility fuels defined broadly to include electricity, natural gas, and home heating oil. Regarding transportation fuels, we suggest splitting the difference between the House (7.6 cents/gal) and Senate (4.3 cents/gal) taxes on gasoline and diesel fuel, resulting in a tax of 6 cents per gal or $0.48/MBtu. This portion of the tax would be applied to gasoline, diesel fuel, and marine fuel as in the Senate bill.

Regarding utility fuels, we suggest using the base rate in the House bill, $0.27/MBtu. A key issue is how to calculate the utility tax, independent of the question of exactly where and from whom it is collected. We strongly urge calculating the tax based on fuel input for power generation (fossil fuels, nuclear, and hydropower) at individual power plants, rather than just taxing electricity sales. This would apply the electricity portion of the utility tax to about 32 Quads of energy use rather than about 10 Quads, would give utilities an incentive to increase the efficiency of power generation and supply, and would avoid disadvantaging natural gas relative to electricity in end-use markets. Natural gas would be at a disadvantage if only end-use electricity is taxed and if electricity is taxed at the same rate as natural gas. The utility tax can still be included in utility bills and collected from end users, even if it is calculated based on power plant fuel input.

We recommend applying the utility energy tax to all types of consumers -- residential, commercial, and industrial. This avoids placing the energy tax burden totally on households, although they are likely to pay most of the overall energy tax. Natural gas should be included whether or not it is purchased from a distribution utility or a pipeline company. Home heating oil (including LPG) should be included in order not to encourage oil use over gas use in the residential sector. Likewise, oil products used by industry could be taxed, although we do not include them in our proposal or analysis.

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In order to make the tax more acceptable to energy-intensive manufacturing companies, we suggest including an investment tax credit for investments that reduce fossil fuel energy intensity. A 20 percent ITC, for example, could be offered to manufacturing industries for investments in energy efficiency, cogeneration equipment, process modernization, or renewable energy sources. The ITC should be capped at a company's energy tax liability.

An ITC of this form is relatively simple and straightforward, and would encourage investment in technologies that reduce carbon dioxide and other pollutant emissions. A company could use the ITC (or a combination of the ITC and normal expensing of energy costs when calculating income taxes) to offset its entire energy tax. With the ITC offset option included, we urge no automatic exemptions from the tax, i.e., aluminum producers, petroleum refiners, etc. would be covered by the utility tax but would have the opportunity to effectively "opt out" by making investments that lower energy intensity. If a large fraction of companies take advantage of this option, it would have a significant impact on national CO2 emissions.

ESTIMATED TAX REVENUE

In estimating tax revenue, we use DOE/EIA's projection of national energy use in 1996, the mid-year in the 1994-98 period (see Annual Energy Outlook 1993). We assume the energy tax cuts consumption from otherwise projected levels by 1.5%, due to consumer response to the modest tax. Also, we assume that the tax is phased in at half the full value in the first year and reaches full value in the second year and thereafter. In estimating the net revenue for the Treasury generated by the tax, we assume that the ITC feature and the ability to deduct energy costs from business income for tax purposes results in net revenue equal to 25% of gross revenue for the utility tax applicable to all businesses (manufacturing as well as commercial sector companies).

In terms of gross tax revenue, our proposal would generate about $22.7 billion per year as of 1996 ($9 billion from the transportation fuels portion, $9 billion from the utility portion on businesses, and $4.7 billion from the utility portion on residential consumers). With the business adjustment described above, we estimate net revenue for the Treasury of about $15.9 billion per year as of 1996 ($9 billion from the transport fuels portion, $2.3 billion from the utility fuels portion on businesses, and $4.7 from the utility fuels portion on residential consumers). If the tax is phased in over two years, the total net revenue for the Treasury during the five-year period (1994-1998) would be approximately $71.7 billion. This is almost identical to the amount of net revenue attributed to the energy tax in the House bill. On a net basis, a large majority but not all of the tax would be paid directly by residential consumers.

ESTIMATED EMPLOYMENT IMPACTS

Extending our previous economic impact analysis of the broad-based energy tax to this current proposal (see, "Energy Savings and Job Impacts from the Proposed Energy Tax," ACEEE, 1993), indicates a positive although modest employment benefit. The findings suggest that as businesses and consumers respond to the modest price increases from the energy tax, they will become more energy efficient. The money saved due to reduced energy purchases will, in effect, become a source of new discretionary income.

The new income will, in turn, enable businesses to expand their output of goods and services, and provide households the opportunity to purchase more food, clothing, housing, and other consumer goods. Perhaps more importantly, the new income will be spent in economic sectors which have a much higher labor intensity than the energy industry as a whole.

By accounting for the energy savings, and for the higher labor intensities in non-energy sectors, we find that the energy tax proposal suggested in this paper, by itself, will lead to a net increase of about 24,000 jobs nationwide. Most of the net job gain would result from the transportation fuels tax. Consumers and businesses could realize much greater benefits if energy efficiency efforts are expanded at the same time that the tax is phased in. This is one of the objectives of the investment tax credit previously described.

ESTIMATED ENVIRONMENTAL IMPACTS

As with any strategy that promotes greater energy efficiency, the energy tax will reduce pollutant emissions and provide environmental benefits. The estimated 1.5 percent energy savings from the tax proposal descrived above would reduce U.S. carbon emissions by about 24 million metric tons per year. This estimate is similar in magnitude to the reduction projected for the original energy tax proposed by the Clinton Administration. The reduction represents about 20-25 percent of the total carbon emissions reduction necessary to meet the President's commitment to stabilize greenhouse gas emissions at their 1990 level by 2000. By enacting a significant energy tax, achieving the stabilization commitment will be greatly facilitated.

Enacting an energy tax will lead to reductions in other pollutants beside carbon dioxide. We estimate that the tax described above will reduce NOx emissions by about 300,000 metric tons per year, CO emissions by about 680,000 metric tons per year, and SO2 emissions by about 180,000 metric tons per year. The SO2 estimate asssumes the goals of the 1990 Clean Air Act Amendment are met (i.e., baseline emissions are reduced by 10 million tons). The energy tax will lead to reductions in particulates, volatile organic compounds, and other pollutants as well.