

above: As much as possible, maintain neutrality across technologies by keeping subsidies broad-based and by calibrating the subsidy rates to the subsidized item's ability to replace and improve the status quo. That's not easy for politicians who make our laws. But hey, when they shun old Pigou and his taxes, they're asking for it. ■

What Would a Rational Energy Tax Policy Look Like?

by Kevin A. Hassett and
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Our national energy tax policy is misguided in at least three ways. First, a policy to promote energy independence through reduced oil imports is based on a fundamental misunderstanding of how energy markets function. A policy that attempts to establish energy independence by promoting domestic fossil fuel production is especially misguided. Second, our policy relies heavily on energy subsidies, most of which are socially wasteful, inefficient, and driven by political rather than energy considerations. Third, current energy taxes are deficient on a number of levels.

We Aren't Achieving Energy Independence

Reducing reliance on foreign oil is a popular rallying cry with broad bipartisan support. The concern over our vulnerability to OPEC supply disruption is understandable given that the United States imports over 60 percent of the oil it consumes each year. Of the oil we import, 40 percent comes from OPEC countries, and nearly half of that comes from the Persian Gulf region. Many are also concerned that oil money helps countries like Iran pursue activities that are contrary to American foreign policy.

In response to those concerns, current tax policy promotes domestic oil and gas production in a variety of ways. A production tax credit for "non-conventional oil" is provided, essentially a subsidy for methane recovered from coal mines; also allowed is generous depreciation for intangible expenses associated with drilling as well as generous percentage depletion allowances for oil and gas.

What's wrong with that? It ignores the fact that oil is essentially a generic commodity priced on world markets, as is natural gas. Even if the United States were to produce all the oil it consumes, it would still be vulnerable to oil price fluctuations. A supply reduction in the Middle East would raise prices of domestic oil just as readily as it raises prices of imported oil. And reduced U.S demand for oil from countries such as Iran has no effect, as that country can just sell oil to other countries at the prevailing world price. That effect has been made

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abundantly clear by historical experience. The United States has bought no oil directly from Iran since 1991. But as recent headlines show, the absence of U.S. import revenue hasn't inhibited Iran's nuclear ambitions. In fact, despite the U.S. import ban, Iran was the world's fourth-largest net oil exporter in 2004.

If one wanted to reduce U.S. reliance on Mideast oil, the only rational policy is to wean the United States off oil and natural gas more generally. That would lower the price of oil by removing the United States from world demand, and it would protect the country from fluctuations in energy prices because of supply dislocations. On the other hand, one would expect that alternative energy sources would have prices that would fluctuate with prices for close substitutes (for example, biodiesel), so the goal of true independence is elusive.

A policy of energy independence that depends on increasing domestic oil and gas supply through subsidies has several defects. First, subsidies reduce production costs and so do nothing to discourage oil consumption. Second, the policy encourages the consumption of high-cost domestic oil in place of low-cost foreign oil. A policy to encourage use of domestic reserves and thus become increasingly vulnerable in the future to foreign supply dislocations seems counterproductive. Third, it is expensive. The five-year cost for just the incentives mentioned above totals nearly \$10 billion, according to the most recent administration budget submission.

Assuming reliance on oil is to be discouraged, a clear sign that policy is headed in the wrong direction is the U.S. economy's high, and recently increasing, dependence on oil. Oil comprised nearly 48 percent of primary energy consumption in the United States in 1977. Since that peak, it fell to a low of 38.1 percent in 1995 before inching up to 40.2 percent in 2004.¹ The 16 percent drop in the oil share from the 1977 peak to 2004 falls far short of the percentage reduction in oil share of other developed countries. The United Kingdom, for example, has reduced its oil share from a peak of 50 percent to just under 36 percent, a decline of 29 percent. France has reduced its oil share by 48 percent, and Germany by 22 percent. In Asia, Japan has reduced its oil share by 39 percent, and even China has reduced its oil share by more than the United States, with a 26 percent reduction. Our policies are leaving us increasingly vulnerable relative to other major oil-consuming nations.

One might argue that because the United States is such a large producer of petroleum products — it is the third-largest supplier behind the former So-

viet Union and Saudi Arabia — its domestic supply incentives help reduce the world price of oil. Those efforts, however, are but a drop in the bucket. It has been estimated that the domestic oil production incentives in the U.S. tax code have lowered world oil prices by less than one-half of 1 percent.²

Energy independence as popularly construed has little economic content. If reliance on oil is a problem, then supply subsidies make little sense, as they just encourage additional reliance on oil.

Existing Energy Subsidies Are Inefficient

Our renewable supply policies are also inefficient. The single largest energy tax expenditure in the U.S. budget is the tax credit for alcohol fuels, with a five-year revenue cost of \$12.7 billion. The 51-cent-per-gallon credit primarily benefits corn-based ethanol. The subsidies to corn-based ethanol are politically motivated, as evidenced by the 54-cent-per-gallon tariff on imported ethanol. There is even debate about whether ethanol takes more energy to produce than it contains.³ Even viewed optimistically, corn-based ethanol is expensive and provides little new energy to the economy.

In addition to the ethanol subsidy, the tax code provides investment tax credits for solar and geothermal power production and advanced coal-burning power plants under section 48. Recent research shows that the 20 percent investment tax credit for new integrated gasification combined cycle coal plants makes that technology cost-competitive with new pulverized coal plants. The subsidy for solar-generated electricity, however, is not large enough to make solar energy cost-competitive with natural gas or other shoulder- or peak-load power plants.⁴

Section 45 of the tax code provides production tax credits for wind power, biomass, and other renewable power sources. The tax credit is 1.5 cents per kWh (in 1992 dollars) and is currently worth 1.9 cents per kWh. The section 45 and 48 tax credits are the second-largest energy tax expenditure with a five-year cost of over \$4 billion. The production tax credit for wind and biomass makes those two power sources cost-competitive with natural gas.⁵ The problem with production tax credits is that they

²Gilbert E. Metcalf, National Bureau of Economic Research Working Paper No. 12568, "Federal Tax Policy Towards Energy" (2006).

³David Pimentel and Tad W. Patzek, "Ethanol Production Using Corn, Switchgrass, and Wood; Biodiesel Production Using Soybean and Sunflower," 14 *Natural Resources Research* 65-76 (2005); Alexander E. Farrell et al., "Ethanol Can Contribute to Energy and Environmental Goals." 311 *Science* 506-508 (Jan. 27, 2006).

⁴Metcalf, *supra* note 2.

⁵*Id.*

¹BP, "Statistical Review of World Energy 2006" (2006).

must be financed — either with reduced federal spending elsewhere in the budget or with higher taxes. Presumably the credits exist to encourage non-fossil-fuel electricity production. The credits, however, distort behavior in choosing among non-fossil-fuel power sources.

A better approach would be to levy a tax on the power sources that one wishes to discourage. If, for example, the concern is carbon emissions, then a carbon tax is an appropriate response. A tax of \$12 per metric ton of carbon dioxide in lieu of production tax credits for wind and biomass would make the latter cost-competitive with natural gas.⁶ Unlike subsidies, however, the tax would raise revenue that could finance reductions in other distortionary taxes.⁷ In units perhaps more familiar to most readers, a carbon tax of that magnitude would raise the price of gasoline by 10 cents if it were fully passed on to consumers.

Other production tax credits in the tax code include a production tax credit for electricity produced at nuclear power plants (section 45J). Qualifying plants are eligible for a 1.8-cent-per-kWh production tax credit up to an annual limit of \$125 million per 1,000 megawatts of installed capacity for eight years. That limit will be binding for a nuclear power plant with a capacity factor of 80 percent or higher, thereby converting the credit into a lump sum subsidy for construction of new nuclear power plants.

To summarize, current alternative energy subsidies play political favorites and would be unnecessary if the types of energy that policymakers view as undesirable were taxed efficiently.

Green Taxes Are Good Taxes

Finally, our energy tax rates may well be suboptimal. Taking into account accident externalities, congestion, and unpriced pollution, one recent paper finds that the optimal gasoline tax in the United States is \$1 per gallon, over twice the current rate taking into account federal and state motor vehicle fuel taxes.⁸ Other researchers believe the tax on gasoline should be as much as 35 percent higher, as gasoline is a complement to untaxed leisure.⁹

⁶*Id.*

⁷The advantage of taxes over subsidies for clean power extend beyond the distortionary cost of financing the subsidies. The subsidies lower the cost of electricity and so encourage increased consumption.

⁸Ian Parry and Kenneth A. Small, "Does Britain or the United States Have the Right Gasoline Tax?" 95 *American Economic Review* 1276-1289 (2005).

⁹Sarah E. West and Roberton C. Williams, NBER Working Paper No. 10330, "Empirical Estimates for Environmental Policy Making in a Second-Best Setting" (2004).

Assuming they are correct, a sizable increase in the gasoline tax would be in order. That would reduce the gap between the United States and the rest of the world. The United States is a notable outlier in its taxation of gasoline relative to other developed countries. The United States has the lowest tax rate on unleaded gasoline among all the OECD countries. Its tax rate per gallon (\$.394) in the fourth quarter of 2005 was less than half that of the next-closest country on the list and compares to an OECD average rate of \$2.99 per gallon.¹⁰

Our one tax policy to discourage low-mileage automobiles, the gas guzzler tax, contains a loophole large enough to drive a sport utility vehicle (SUV) through. The gas guzzler tax is a tax on automobiles that get less than 22 miles per gallon and explicitly excludes SUVs, minivans, and pickup trucks. That excluded class of vehicles represented 54 percent of the new-vehicle sales in 2004.¹¹ The light truck category (comprising SUVs, minivans, and pickup trucks) has been the fastest growing segment of the new-vehicle market, growing at an annual rate of 5.5 percent between 1990 and 2004. New-car sales are falling at an annual rate of 1.6 percent. Unofficial congressional estimates suggest that phasing out the SUV loophole over four years would raise roughly \$700 million annually once the phaseout was complete. Optimal tax policy does not support treating similar assets differently, and current policy introduces a significant distortion that could easily be fixed.

Better Policies

If one accepts the view that U.S. reliance on oil is a problem, then we can do much better than the policies mentioned above. A rational U.S. energy tax policy would include 1) an end to energy supply subsidies; 2) a green tax swap; 3) an end to the gas guzzler tax loophole and possible use of "feebates"; and 4) conservation incentive programs. Ending subsidies for fossil fuel production would level the playing field among energy sources and shift us from a policy of promoting fossil fuel supply to encouraging a reduction in fossil fuel consumption. It would also move us away from a woefully inefficient reliance on corn-based ethanol.

Second, we should implement a green tax swap. A green tax swap uses revenue from environmentally motivated taxes to lower other taxes in a revenue-neutral reform. For example, Congress could reduce reliance on oil and other polluting sources of energy by implementing a carbon tax.

¹⁰International Energy Agency, "Energy Prices and Taxes, Fourth Quarter 2005" (2006).

¹¹U.S. Census Bureau, *Statistical Abstract of the United States*, Table 1027 (2006).

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The revenue could be used to finance corporate tax reform or reductions in the payroll tax.¹² Consider a tax of \$15 per metric ton of carbon dioxide — a tax rate comparable to the current carbon price in the European Emissions Trading System. Focusing only on carbon¹³ and assuming a short-term reduction in carbon emissions of 10 percent in response to the tax, a \$15-per-ton tax rate would collect nearly \$80 billion a year, an amount that represents 28 percent of all corporate taxes collected in the United States in 2005. Assuming the carbon tax was fully passed forward into consumer prices, it would raise the price of gasoline by 13 cents a gallon, the cost of electricity generated by natural gas by 0.6 cents per kWh, and the cost of electricity generated by coal by 1.4 cents per kWh.

Or Congress could raise the gasoline tax, index it for inflation, and return the additional revenue through a tax reduction. A gasoline tax increase is less efficient than a carbon tax at reducing carbon emissions.¹⁴ Accepting the references cited above at face value, however, the gasoline tax increase would move us in the direction of the optimal Pigouvian tax on motor fuels, taking into account other pollution externalities as well as congestion and accident externalities.¹⁵

Next we should eliminate the gas guzzler tax loophole for SUVs and light trucks. Congress might also consider augmenting the gas guzzler tax by shifting to a feebate approach whereby low-mileage vehicles are taxed at increasing rates, as under the current gas guzzler tax, and fuel-efficient vehicles receive a tax subsidy. That could be structured to be revenue neutral.

Research subsidies into alternative energy sources are justifiable on economic grounds because research and development expenditures often aid

competitors' discoveries. However, so much money is spent on oil in the world economy that the economic potential of a worthy competitor is vast. That profit motive is likely impetus enough to spur research, and if the private sector is not researching an area, it may well be because it is viewed as economically unattractive by the market's judges. While a good economic argument may be made for federal support for R&D because of its public benefit, it is difficult for scientists to predict the best new technologies 20 years to 50 years in advance.

Finally, the conservation investment incentives that were recently introduced in the Energy Policy Act of 2005 (P.L. 109-58) could be increased. A study of energy conservation incentives in the Energy Tax Act of 1978 found that the tax credit was much more successful at raising investment levels than was a comparable energy price increase.¹⁶ It was speculated that the credit program may have publicity effects that spur investment that the energy price increase lacks. And uncertainty over the permanence of future energy price increases makes the certainty of the tax credit at purchase more valuable. A conservation credit that is technologically neutral would be a worthy accompaniment to a higher tax on carbon-based fuels if reducing reliance on those forms of energy is a policy objective.

Congress must decide if it is serious about reducing reliance on oil as a source of energy. If it is, then policies that would accomplish economically meaningful objectives would look very different from the policies now in place. ■

¹⁶Kevin Hassett and Gilbert E. Metcalf, "Energy Tax Credits and Residential Conservation Investment: Evidence From Panel Data," 57 *Journal of Public Economics* 201-217 (1995).

¹²See the President's Advisory Panel on Federal Tax Reform's final report at <http://www.taxreformpanel.gov/final-report/>. Gilbert E. Metcalf, NBER Working Paper No. 11665, "Tax Reform and Environmental Taxation" (2005), discusses how a carbon tax could be used to finance corporate tax integration.

¹³Greenhouse gases also include methane, nitrous oxide, and fluorocarbons. Carbon dioxide emissions in 2004 were 5,900 million metric tons in the United States, according to data from the U.S. Energy Information Agency at <http://www.eia.doe.gov/environment.html>.

¹⁴William Pizer et al., "Modeling Economy-Wide vs. Sectoral Climate Policies Using Combined Aggregate-Sectoral Models" 27 *Energy Journal* 135-168 (2006), presents model results showing that focusing climate change policies only on the transportation and electricity sectors doubles the cost of a given carbon emissions reduction.

¹⁵Note too that the motor vehicle fuels tax is sometimes justified as a use charge for highways. To the extent that is true, the current gas tax is even further from its optimal Pigouvian level.