

# The Subsidy Game

by Andy Kerr

Most examinations of government energy subsidies don't factor in what economists call "externalities," side effects or consequences of activities that affect other parties without being reflected in the costs involved. With energy production, some of the biggest externalities are the social, health, and environmental effects of pollution.

The question is not whether fossil fuel, nuclear, and renewable energy industries are government subsidized, but how much, how equitably, and at what cost to the environment, and to taxpayers' pocketbooks and health.

The ostensible purpose for government subsidies is to achieve social goods and services that the private sector is unwilling or unable to provide. The political purpose may or may not be the same.

Subsidies are necessary because the social good or service desired might not be profitable to a business. The federal government has subsidized industries and facilities since its inception. The dredging of ports, giving away millions of acres of land to get railroads built, and the home mortgage interest deduction are all government subsidies.

Government subsidies may take several forms, including the funding of basic research. For instance, we wouldn't have PV modules on earth if not for NASA needing them in space. Most libraries and airports are government-run, which is a subsidy to private citizens or private industry. Subsidies can also be grants, tax breaks, or tariffs on foreign goods to protect domestic manufacturers.

Of course, when there is not general agreement on the worthiness of a subsidy, such as public libraries, one person's wasteful government subsidy is another's wise government investment. Whether government subsidies make sense depends upon the subsidy and on ideology. Should government be picking winners and losers?

### Energy Subsidies: How Much To Whom?

As to which energy sources are being subsidized and by how much is a matter of perspective. Below, some of the most recent critiques are surveyed. Collectively considering all of them results in relatively good comparison of subsidies between various energy sources.

A report prepared for the nuclear industry by Management Information Services (MIS), an economic research and management consultancy, analyzed federal energy incentives (aka subsidies) to the oil, natural gas, coal, hydroelectric, nuclear, renewables (primarily wind and solar), and geothermal industries over the past 60 years (see "Summary" table). They identify six categories of subsidies:

**Tax policy** includes special credits, deductions, allowances, and exemptions available only to a particular energy industry. As examples, wind and solar get tax credits, while the oil and gas industry receives special allowances—such as more rapid depreciation for tax purposes than is allowed for other industries—for resource depletion and intangible drilling costs.

**Regulation** includes "gains realized by energy businesses when they are exempt from federal requirements that raise cost or limit prices" and "costs of federal regulation that are borne by the

general budget and not covered by fees charged to regulated industries." The nuclear power industry couldn't afford to pay the insurance premiums needed in the event of an accident, so the federal government relieves them of the obligation.

**Research and development** is also for demonstration programs. Neither the nuclear or solar industries would have gotten off the ground as they did without federally funded research. Perhaps PV modules would have come about by private firms seeking profit that would have been available had fossil fuels not been subsidized, but perhaps not—and certainly not as early as fossil fuels did.

**Market activity** "includes direct federal government involvement in the marketplace." Safety airbags in automobiles became commonplace after the federal government required them for its own fleets.

**Government services** include "all services traditionally and historically provided by the federal government without direct charge." For example, infrastructure investments like the deepening of ports for bigger ships to haul coal, oil, or liquefied natural gas.

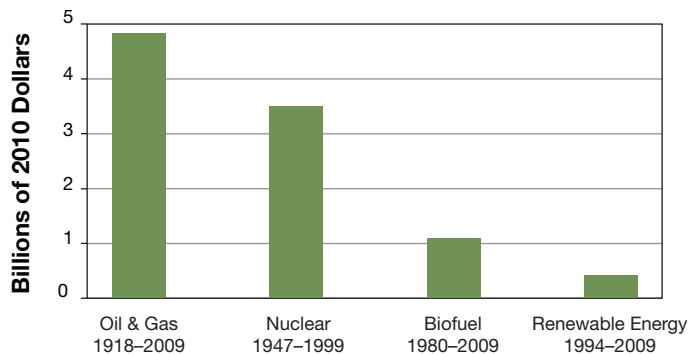
**Disbursements** "are direct financial subsidies such as grants." (In the table, the negative number in this column for the nuclear industry represents a \$18 billion surplus due to the nuclear industry having paid into a fund for waste disposal that hasn't been tapped.) A huge flaw in the Management Information Services (MIS) methodology for evaluating federal energy incentives for nuclear power—and therefore the numbers—is the way it accounts for the \$16 billion that the nuclear power industry has paid into a federal fund to help pay for permanent waste storage. As the federal government has yet to open a high-level nuclear waste repository, MIS treats this number as a subsidy to the federal government from the nuclear power industry. However, the current estimated cost to build and operate such a facility at Yucca Mountain, Nevada, is \$96.2 billion. That facility has been built, but has not yet received a license to operate, due to safety concerns.

## Summary of Federal Energy Incentives, 1950-2010

Incentive	Energy Source (Data in Billions of 2010 Dollars)						
	Oil	Gas	Coal	Hydro	Nuclear	RE	Geothermal
Tax policy	\$194	\$106	\$35	\$13	—	\$44	\$2
Regulation	125	4	8	5	16	—	—
R & D	8	7	36	2	74	24	4
Market activity	6	2	3	66	—	2	2
Government services	34	2	16	2	2	2	—
Disbursements	1	—	7	2	-18	2	—
<b>Total</b>	<b>\$368</b>	<b>\$121</b>	<b>\$105</b>	<b>\$90</b>	<b>\$74</b>	<b>\$74</b>	<b>\$8</b>
<b>Share</b>	<b>44%</b>	<b>14%</b>	<b>12%</b>	<b>11%</b>	<b>9%</b>	<b>9%</b>	<b>1%</b>

Source: 60 Years of Energy Incentives: Analysis of Federal Expenditures for Energy Development, a report prepared for the nuclear industry

## Historical Annual Average Energy Subsidies



Source: *What Would Jefferson Do: The Historical Role of Federal Subsidies in Shaping America's Energy Future*. (Research limitations resulted in the analysis for nuclear energy ending in 1990. The authors say that if they had assumed 1990s-level subsidies extended through the 2000s, that the annual average would only be slightly more.)

Even though this study was funded by the nuclear power industry, the report's evaluation of other energy sources is generally credible. Other analysts have come up with similar results. Nancy Pfund is with DBL Investors, a venture capital firm that specializes in investing in solar and energy-efficiency companies. Although she's not a disinterested analyst of energy subsidies, Pfund's analysis is well worth considering. As the graph (above) shows, the older the industry, the greater the subsidies.

Government subsidies to the coal industry began earlier than the rest and continue to this day. However, Pfund's analysis focused on government subsidies of various energy sectors during their early days. The farther back in time, though, the harder it is to obtain actual numbers. "Suffice it to say, domestic coal did not arrive on the scene as a mature, low-cost, and competitive fuel source. Rather, government support over many years helped to turn it from a local curiosity in Schuylkill County, Pennsylvania, into the dominant fuel source of its time," says Pfund.

In her report, Pfund shows that the oil and gas and nuclear industries were subsidized far more during their early development—both in real dollars and as a percentage of the federal budget—than wind and solar. Cumulatively, oil and gas has received \$447 billion since 1918; nuclear, \$185 billion since 1947; biofuels, \$32 billion since 1980; and other renewables, \$6 billion since 1994 (all in 2010 dollars).

In a 2010 study, the Tax Foundation, a nonpartisan educational organization that lies on the conservative end of the political spectrum, could only manage to find fossil fuel subsidies of \$2.8 billion per year, while "green energy" subsidies were found to be \$11.3 billion per year. The Foundation's main point is that the American oil companies pay way more taxes than they receive in subsidies. True, as often they have huge profits. In the first half of 2011, the six largest companies (aka "Big Oil") had profits that totaled \$88.1 billion. Of course, the taxes they pay are supposed to be their fair share for the government services that all of us receive; it's not supposed to be the mere moving of nickels from one corporate pocket to another.

However, as a July 3, 2010, article in *The New York Times* noted, "an examination of the American tax code indicates that oil production is among the most heavily subsidized businesses, with tax breaks available at virtually every stage of the exploration and extraction process." It continues:

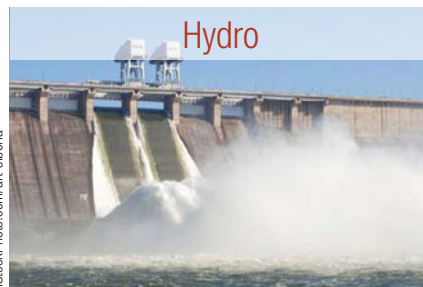
*According to the most recent study by the Congressional Budget Office, released in 2005, capital investments like oil field leases and drilling equipment are taxed at an effective rate of 9%, significantly lower than the overall rate of 25% for businesses in general and lower than virtually any other industry.*

*...for many small and midsize oil companies, the tax on capital investments is so low that it is more than eliminated by various credits. These companies' returns on those investments are often higher after taxes than before.*



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This is another way of saying that not only did such companies pay no taxes, they actually made profits from the government.

### The Price We Pay for Energy

Most examinations of government energy subsidies don't factor in what economists call "externalities," side effects or consequences of activities that affect other parties without being reflected in the costs involved. With energy production, some of the biggest externalities are the social, health, and environmental effects of pollution.

Externalities can be difficult to quantify, especially when it comes to energy. However, according to the National Academy of Sciences' July 2011 "Report to the President/Sustaining Environmental Capital":

*Just the damages from [fossil fuel energy's] external effects [that] the committee was able to quantify add up to more than \$120 billion for the year 2005. (These are damages related principally to emissions of [oxides of nitrogen, sulfur dioxide, and particulates] relative to a baseline of zero emissions from energy-related sources for the effects considered in this study.) Although large uncertainties are associated with the committee's estimates, there is little doubt that this aggregate total substantially underestimates the damages, because it does not include many other kinds of damages that could not be quantified for reasons explained in the report, such as damages related to some pollutants, climate change, ecosystems, infrastructure, and security.*

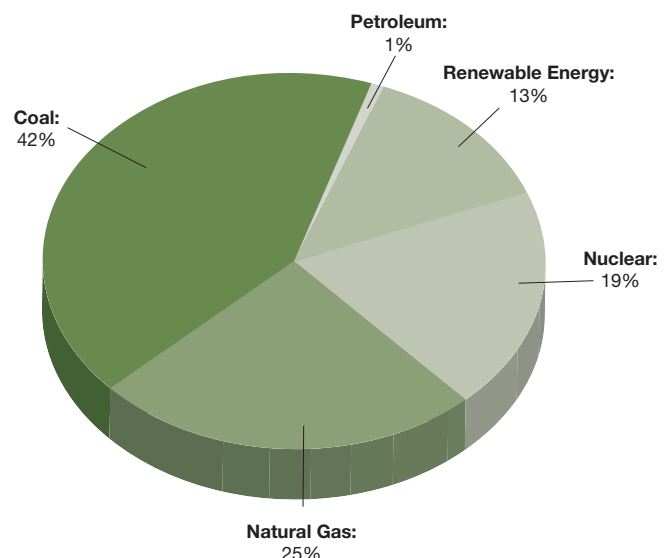
Soil, air, and water pollution—and its effects on human and environmental health—costs our society significantly. Besides not assessing fees for polluting industries' externalities, the federal government also shields certain energy generation from liability. The *Green Scissors 2011* report, promoting federal environmental and fiscal responsibility, notes that:

*...the Oil Pollution Act of 1990 caps industry liability for offshore drilling accidents at a paltry \$75 million, but they can cost taxpayers billions of dollars. The cleanup of the British Petroleum's 2010 Deepwater Horizon spill in the Gulf of Mexico has already topped \$6.8 billion, which has been paid for by the federal and state governments.*

Nor do most examinations of government energy subsidies factor in national security costs. In *Reinventing Fire: Bold Business Solutions for the New Energy Era*, energy-efficiency expert Amory Lovins examines the true costs of the nation's addiction to oil, some of which can easily be considered industry subsidies.

- "Of America's \$0.9 trillion oil bill in 2008, \$388 billion went abroad. Some of this money paid for state-sponsored violence, weapons of mass destruction, and terrorism.
- "In 2010, a Princeton study pegged the cost of U.S. forces just in the Persian Gulf in just one year (2007) at half a trillion dollars, or about three-fourths of the nation's total military expenditures. That's similar to the peak expenditure rate for the Cold War. It is also about 10 times what the U.S. typically pays for all the oil it imports from the Persian Gulf.

### Sources of U.S. Electricity Generation, 2011



- “[T]he economic costs of oil dependence, plus U.S. military expenditures for Persian Gulf forces (and minus the cost of the oil itself), total roughly \$1.5 trillion a year, or 12% of GDP—far more than our total annual energy bill.”

Was the Iraq War about oil? Former Defense Secretary Donald Rumsfeld said the U.S. invasion of Iraq had “nothing to do about oil.” Yet former Federal Reserve Chairman Alan Greenspan, writing in his memoir, said, “It is politically inconvenient to acknowledge what everyone knows. The Iraq War is largely about oil.”

Nobel economist Joseph Stiglitz of Columbia University and Harvard University budget expert Linda Bilmes estimate the eventual cost of the Iraq War at \$4 to \$6 trillion. For perspective, the recent U.S. financial bailout cost \$4.6 to \$8.7 trillion. Even adjusted for inflation, World War II cost a mere \$3.6 trillion.

The cost of America’s oil addiction can also be measured in human lives. As of May 29, 2012, 4,409 U.S. troops have been killed and nearly 32,000 wounded. Not to mention the approximately 655,000 Iraqi fatalities, according to *The Lancet*, a British medical journal.

## Not a Level Playing Field

Many direct government subsidies for the coal, oil and gas, and nuclear industries are buried deep in permanent provisions of the U.S. tax code. Once embedded, a provision of law is hard to remove. In contrast, most government subsidies for wind and solar come in the form of short-term provisions that expire after a period of time. The wind and solar lobby, which is far smaller than the lobby machine for Big Oil, has to continuously use its resources to seek extensions to renewable tax credits. With the financial and political states of the nation, the best they can do is get extensions to last just a few years. Meanwhile, the fossil fuel and nuclear industries can lobby to maintain the status quo and be successful.

Certain industries, such as pipeline operators, drillers, and mine operators, can organize themselves under a master limited partnership, which pays no corporate tax. Any tax liability passes directly to investors, who pay the

lower capital gains rate (which is lower than most income tax rates). Solar and wind companies cannot do the same.

## Good Government Policy or Not?

If fossil and nuclear fuel prices reflected their true costs to human health, the environment, and economic growth, there wouldn’t be such industries—the energy they produce would be too expensive.

Government subsidies either create markets or industries, or correct market failures. It is ultimately a political question of whether society needs a missing industry or that a market needs correcting.

## Getting Good Government Policy

Leveling the playing field so renewable energy can fairly compete with nonrenewable energy can be done in basically three ways. Implementing each approach comes with its own set of political challenges.

- **Increase renewable energy subsidies to be commensurate with nonrenewable energy subsidies.** If you can’t beat ‘em, join ‘em. Of course, in these fiscal times, getting more grants, tax credits, or tax breaks is difficult.
- **Eliminate all government subsidies to all forms of energy.** If oil, gas, coal, and nuclear energy were not subsidized, renewable energy sources wouldn’t need any subsidies, either. Clean and safe energy would dominate the market. However, while it’s hard to *get* a government subsidy, it’s even harder to *get rid of* one.
- **Internalize externalities.** If the fossil fuel industry had to pay for its pollution of the environment and its harm to human health, its product would be so expensive that renewable energy resources would have the wind at their back on the sunny side of the street. Eventually, Big Tobacco was held accountable; maybe Big Oil will be, too.

While every president since Richard Nixon has called for energy independence, the United States is still reliant on foreign oil. According to the Energy Information Administration, the



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## Geothermal



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United States imports about 49% of its petroleum supply. In his 2006 State of the Union address to Congress, President George W. Bush said, “America is addicted to oil.”

Yet at this writing, Iran is threatening to close the Strait of Hormuz, a navigational chokepoint through which 20% of the world’s annual oil production must pass. The United States says it will not allow any restriction of oil moving from the Persian Gulf. The downside of this conflict is the threat of war. The upside is that oil prices are rising, and higher oil prices make renewable energy options more attractive.

### Positive Trends

The good news is that even if the U.S. energy playing field is not leveled, the *trends* for renewables are headed in the right direction, while the trends for the fossil fuels and nuclear energy industries are going in the wrong direction (for those industries, but not for those who breathe air and drink water and/or pay taxes).

In the United States, many coal power plants are shutting down because it’s too expensive to make upgrades to meet requirements of the Clean Air Act. Of course, much of this demand for energy may move to natural gas, rather than renewables. But natural gas faces a more problematic future, as public concerns increase about the environmental costs of obtaining gas trapped in shale—a practice known

as hydraulic fracturing, or “fracking,” where a mixture of chemicals, sand, and water are injected into bedrock to release pockets of natural gas. This practice has been linked to chemical contamination of water supplies and low-level earthquakes. In contrast, PV modules and wind generators provide green, sustainable electricity without air, soil, or water pollution.

In general, the trend has long been—and, in all likelihood, will continue to be—that the cost of renewable energy will continue to decrease, while the cost for nonrenewables will continue to increase.

### Access

Politically, Andy Kerr is a flexitarian who—depending upon the circumstances—favors markets and market-based solutions, government regulation, social group coercion, and/or individual voluntary action. He splits his time between Ashland, Oregon, and Washington, DC, and may be reached at [andykerr@andykerr.net](mailto:andykerr@andykerr.net).

#### Resources:

*Fossil Fuel Subsidies: A Closer Look at Tax Breaks, Special Accounting, and Societal Costs* • [tinyurl.com/homepower1](http://tinyurl.com/homepower1)

*What Would Jefferson Do? The Historical Role of Federal Subsidies in Shaping America’s Energy Future* • [tinyurl.com/homepower2](http://tinyurl.com/homepower2)

*Subsidy Gusher: Taxpayers Stuck With Massive Subsidies While Oil and Gas Profits Soar* • [tinyurl.com/homepower3](http://tinyurl.com/homepower3)

*Green Scissors: Cutting Wasteful and Environmentally Harmful Spending* • [tinyurl.com/homepower4](http://tinyurl.com/homepower4)

Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use. Washington, DC: The National Academies Press. • <http://tinyurl.com/homepower5>

60 Years of Energy Incentives: Analysis of Federal Expenditures for Energy Development. Management Information Services, Washington, DC. • <http://tinyurl.com/homepower6>



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