Q. What tax incentives encourage energy production from fossil fuels?

A. Provisions of the federal income tax that subsidize domestic production of fossil fuels include the expensing of exploration, development, and intangible drilling costs; the use of percentage depletion instead of cost depletion to recover drilling and development costs of oil and gas wells and coal mining properties; and numerous smaller incentives for production and distribution of oil, coal, and natural gas.

Various tax incentives promote investment in fuel development, potentially diverting capital from investments in other assets with higher pretax yields. Several studies have found that the effective marginal tax rate—the extent to which all applicable tax provisions reduce the after-tax return on new investment—is much lower for oil, gas, and coal development than for other assets. The Obama administration proposed eliminating these incentives in most of its budgets, but Congress took no action.

Supporters justify these tax incentives as a means of reducing US dependence on imported oil. But such incentives also encourage more rapid exhaustion of domestic supplies, which may increase dependence on imports in the long run. The three largest energy tax incentives are expected to reduce federal tax revenue by nearly $11.6 billion from 2017 to 2021 (figure 1).

Intangible drilling costs cover the labor and materials needed for drilling and developing oil and gas wells and coal mines. Independent oil and gas producers (i.e., those without related refining and marketing operations) may deduct these costs from income in the year incurred, even though, as capital investments, they produce returns over many years. Integrated oil and gas companies may deduct 70 percent of these costs in the first year and recover the remaining 30 percent over the next five years.

With percentage depletion, producers can deduct a fixed percentage of gross revenue from a property as capital expenses each year. In contrast, with conventional cost depletion, producers deduct their actual costs as the resources from a well or mine are depleted. The federal income tax allows independent producers—but not integrated companies—to deduct 15 percent of gross revenue from their oil and gas properties as percentage depletion, without regard to how much they have invested in the properties. Percentage depletion is permitted only on the company's first 1,000 barrels per day from a property and is limited to net income from oil and gas properties. Percentage depletion is also available for coal and other minerals at varying rates.

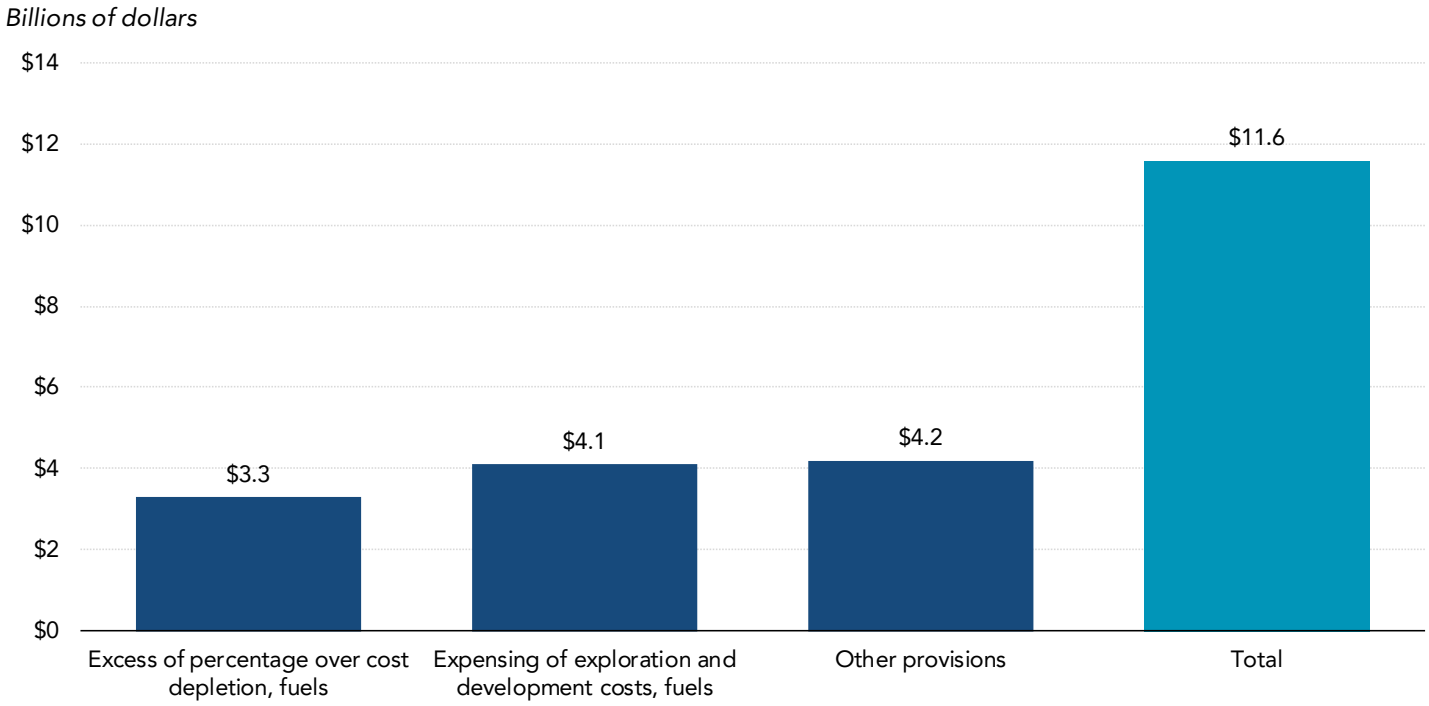
Key Elements of the U.S. Tax System

What tax incentives encourage energy production from fossil fuels?

FIGURE 1

Tax Incentives for Energy Production from Fossil Fuels

Revenue losses, fiscal years 2017–21



Source: Joint Committee on Taxation (2018).
Note: "Other provisions" includes exception from passive loss limitations for working interests in oil and gas properties, capital gains treatment of royalties on coal, exclusion of interest on energy facility bonds, credit for investment in clean coal facilities, treatment of natural gas distribution facilities as 15-year property, and amortization of all geological and geophysical expenditures over 2 years.

The tax law includes several smaller (but hardly trivial) incentives for investments in refineries, pipelines, oil and gas exploration, and selected coal technologies, including for carbon capture and sequestration. In addition, domestic energy properties used to benefit from the domestic production deduction provided in the American Jobs Creation Act of 2004, but this deduction was repealed in the Tax Cuts and Jobs Act enacted in 2017.

Subsidizing domestic production of fossil fuels is inconsistent with the policy goal of reducing fossil fuel use to counter global climate change. But the adverse effects of the incentives on climate change are minor, because any increase in domestic production they induce mostly displaces imports rather than raising domestic fuel consumption.

Some prior research concludes that the production incentives reduce the world market price of oil by less than 0.1 percent, which would barely effect consumption of gasoline and other oil-based products. Moreover, a recent study by the National Academy of Sciences finds that subsidies for oil and gas production may slightly reduce greenhouse gas emissions by accelerating the conversion of electricity production facilities from coal to natural gas.

Key Elements of the U.S. Tax System

What tax incentives encourage energy production from fossil fuels?

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Q. What tax incentives encourage energy alternatives to fossil fuels?

A. The federal tax code includes more than a dozen incentives for alternatives to fossil fuels. These provisions support electricity production from solar, wind, and other renewable sources and, to much lesser extent, from nuclear facilities. They also support alternative transportation fuels, especially electricity. And they encourage energy efficiency in homes and commercial buildings.

ELECTRICITY PRODUCTION

Several tax provisions encourage electricity production from nonfossil sources. The two largest are the renewable electricity production tax credit (PTC) and the energy investment tax credit (ITC). The PTC provides a per kilowatt hour subsidy to qualifying facilities during their first 10 years of operation. Wind-powered generators are the main recipients, but some geothermal, biomass, solid waste, and hydro facilities also claim it. The ITC provides a one-time credit for new investment in qualifying facilities. Solar generators are its main recipients, with small amounts going to fuel cells, combined heat and power systems, and other projects. The PTC is often known as the Section 45 credit, and the ITC as the Section 48 credit.

Small tax subsidies also target nuclear energy. Existing nuclear facilities get a special deduction for some contributions to future decommissioning funds. There is also an as-yet little-used production tax credit for advanced nuclear power facilities.

ELECTRIC VEHICLES

The tax code provides a substantial tax credit to individuals and businesses who purchase or lease plug-in electric light passenger vehicles and trucks. The credit starts at $2,500 and increases to $7,500 based on battery capacity. Plug-in hybrids typically qualify for credits of $4,000 to $6,000, while all-electric vehicles get the full $7,500. The credit phases out once a manufacturer reaches 200,000 qualifying vehicles. Tesla reached that limit in 2018, and General Motors is expected to do so in late 2018 or 2019. The credit for qualifying Tesla and GM vehicles will then phase down over a year. A smaller tax credit is available for electric motorcycles and other two-wheeled vehicles.

ENERGY EFFICIENCY

The tax code also encourages homeowners and businesses to use less energy, regardless of how produced. The residential energy efficiency tax credit provides up to $500 for energy efficiency improvements in existing homes, including insulation improvements and high-efficiency heating, cooling, and water heating. The $500 maximum applies cumulatively and can be claimed over multiple years. A separate residential energy-efficient property tax credit, known as Section 25D, supports home installation of solar electric and

water heating systems. Commercial buildings get a special deduction of up to $1.80 per square foot for investments in efficient lighting, heating, cooling, water heating, and building envelopes.

OTHER PROVISIONS

Smaller tax incentives for nonfossil energy sources include tax credits for certain bonds supporting renewable energy and energy conservation projects, exclusion from income tax of energy conservation subsidies provided by utilities, tax credits for fuel cell vehicles and alternative vehicle refueling, and tax preferences for biodiesel fuel.

EXPIRING PROVISIONS

Most of these tax provisions sunset every few years, and some have already expired. The residential energy efficiency and second-generation biofuel tax credits are just two of several provisions that expired at the end of 2017 and, as of mid-2018, had not been extended. Others expire later, such as the credit for residential solar, which expires at the end of 2021.

These provisions are part of a larger phenomenon of expiring tax provisions. Most eventually get extended, either before they expire or retroactively. As a result, they are often known as the tax extenders.

Energy provisions do sometimes expire, however. The tax credit for two-wheeled electric vehicles lapsed for all of 2014 before being renewed in 2015. And a substantial tax credit for ethanol fuels expired at the end of 2011.

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Q. What is a carbon tax?

A. Emissions of carbon dioxide and other greenhouse gases are changing the climate. A carbon tax puts a price on those emissions, encouraging people, businesses, and governments to produce less of them. A carbon tax's burden would fall most heavily on energy-intensive industries and lower-income households. Policymakers could use the resulting revenue to offset those impacts, lower individual and corporate taxes, reduce the budget deficit, invest in clean energy and climate adaptation, or for other uses.

WHY TAX CARBON, AND HOW MUCH?

Emissions of carbon dioxide, methane, nitrous oxide, and other greenhouse gases are increasing global temperatures, raising sea levels, shifting rainfall patterns, boosting storm intensity, and harming coral reefs and other marine life. Greenhouse gas emissions thus create a host of potential economic and environmental threats, including property damage from storms, human health risks, reduced agricultural productivity, and ecosystem deterioration (Environmental Protection Agency 2017; National Aeronautics and Space Administration 2018).

Energy prices do not currently reflect these costs of greenhouse gas emissions. Those who benefit from burning fossil fuels generally do not pay for the environmental damage the emissions cause. Instead, this cost is borne by people around the world, including future generations. Imposing a carbon tax can help to correct this externality by raising the price of energy consumption to reflect more of its social cost. The most efficient way to collect such a tax would be upstream from a limited number of fuel producers and importers, rather than downstream from fuel users.

Estimates of the environmental cost of carbon emissions are sensitive to scientific and economic assumptions and thus differ greatly. One prominent estimate, developed by an interagency working group of the United States government, is that carbon dioxide emissions impose social costs of about $40 per metric ton (Interagency Working Group on Social Costs of Greenhouse Gases 2016).

HOW WOULD A CARBON TAX AFFECT WELFARE?

A carbon tax would increase the price of burning fossil fuels and any resulting goods or services. A tax of $40 per ton would add about 36 cents to the price of a gallon of gasoline, for example, or about 2 cents to the average price of a kilowatt-hour of electricity (Marron, Toder, and Austin 2015). Higher energy prices would raise costs for industry and households, resulting in lower profits, wages, and consumption.

The impact of a carbon tax would differ among economic groups depending on the extent of energy price changes and on regional energy production and consumption patterns. Clearly, a carbon tax would fall more heavily on workers and investors in carbon-intensive industries as well as on regions that depend heavily on carbon-intensive fuels, particularly coal.

The distributional impact of a carbon tax would depend on the extent to which businesses could pass higher energy costs to their customers. If demand for goods is less "elastic" (that is, responds less) to price changes than the supply of goods, then consumers will bear more of the carbon tax burden than investors and workers.

Because low-income households consume a more energy-intensive basket of goods than wealthier households do, a carbon tax would be regressive; it would cost poorer households a higher share of their income than wealthier households (Marron, Toder, and Austin 2015). A carbon tax of $20 per ton would account for about 0.8 percent of pretax income for households in the lowest income quintile, as compared to 0.5 percent for the highest income quintile.

The environmental benefits from reduced emissions would be shared by people around the world. Combatting climate change thus poses a fundamental collective action problem. American reductions will be most valuable if they are accompanied by comparable reductions in other nations.

DEPLOYING THE REVENUE

A carbon tax could raise substantial revenue. The Joint Committee on Taxation and the Congressional Budget Office estimated, for example, that a broad-based carbon tax starting at $25 per ton in 2017 and rising at 2 percent more than inflation would have raised $1 trillion over its first decade (Congressional Budget Office 2016). This is close to the amount that the United States currently raises with all its other excise taxes—about 0.5 percent of gross domestic product per year.

The welfare impact of a carbon tax package would depend on how those revenues are used. Using some revenues to increase transfers, reduce Social Security contributions from low-income households, or compensate workers in carbon-intensive industries could soften the regressive impact of the carbon tax. Revenues from a carbon tax could also be used to finance cuts in existing taxes that act as a disincentive to growth. Before the 2017 tax bill, one prominent idea was using carbon tax revenue to reduce the corporate income tax (Marron and Toder 2015). However, because tax cuts on profits would largely benefit the wealthy, this would exacerbate the regressivity of the carbon tax. Revenues could also be used to reduce personal income and payroll taxes, to reduce future deficits, or to invest in clean energy and climate adaptation. What combination to choose depends on political, social, and economic considerations (Marron and Morris 2016).

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