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Energy Tax Provisions That Expired in 2017 ("Tax Extenders")

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Summary

Thirteen temporary energy tax provisions expired at the end of 2017. All of these provisions had expired at the end of 2016, and were retroactively extended by the Bipartisan Budget Act of 2018 (BBA; P.L. 115-123) and made available for the 2017 tax year.

This report briefly summarizes and discusses the economic impact of energy-related tax provisions that expired at the end of 2017, including the following:

Renewable energy property provisions

- Production Tax Credit (PTC) for Nonwind Facilities

Alternative and renewable fuels provisions

- Incentives for Biodiesel and Renewable Diesel
- Incentives for Alternative Fuel and Alternative Fuel Mixtures
- Alternative Fuel Vehicle Refueling Property
- Second Generation (Cellulosic) Biofuel Producer Credit
- Special Depreciation Allowance for Second Generation (Cellulosic) Biofuel Plant Property

Vehicles provisions

- Alternative motor vehicle credit for qualified fuel cell vehicles
- Credit for two-wheeled plug-in electric vehicles

Building energy efficiency provisions

- Credit for Construction of Energy-Efficient New Homes
- Energy-Efficient Commercial Building Deduction
- Credit for Section 25C Nonbusiness Energy Property

Other provisions

- Special Rule to Implement Electric Transmission Restructuring
- Credit for Production of Indian Coal

This report does not include provisions that in the past have been classified as individual or business related. For a general overview of expired tax provisions and tax extenders, see CRS Report R44677, *Tax Provisions that Expired in 2016 ("Tax Extenders")*, by Molly F. Sherlock. For an overview of individual and business provisions, see CRS Report R44925, *Recently Expired Individual Tax Provisions ("Tax Extenders"): In Brief*, coordinated by Molly F. Sherlock; and CRS Report R44930, *Business Tax Provisions that Expired in 2016 ("Tax Extenders")*, coordinated by Molly F. Sherlock.

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Introduction

In the past, Congress has regularly acted to extend expired or expiring temporary tax provisions.[1] Collectively, these temporary tax provisions are often referred to as "tax extenders." Of the 33 expiring provisions addressed in the most recent tax extender legislation, included in the Bipartisan Budget Act of 2018 (BBA18; P.L. 115-123), 18 were energy-related. Thirteen of the energy tax provisions addressed in BBA18 were provisions that had expired in 2016 and were extended through 2017. Thus, even though these provisions were recently extended, they remain expired. These 13 expired energy tax provisions are reviewed in this report.

The expired energy tax provisions are diverse in purpose, providing various types of tax incentives for renewable electricity, alternative and renewable fuels, vehicles, building energy efficiency, and other energy activities. Before BBA18, expired energy tax provisions were extended in the Protecting Americans from Tax Hikes (PATH) Act of 2015, enacted as Division Q of the Consolidated Appropriations Act, 2016 (P.L. 114-113). This law retroactively extended temporary tax provisions that had expired at the end of 2014. Unlike much of the previous tax extender legislation, this law did not temporarily extend most or all expired provisions. Instead, a number of temporary provisions were made permanent, while others were extended through 2016 or 2019. While certain business, individual, and charitable provisions were made permanent or extended through 2019, energy-related provisions were generally extended for two years, through 2016, in the PATH Act.

There were longer-term extensions for certain renewables in Division P of P.L. 114-113. Specifically, the law provided longer-term extensions with scheduled phaseouts of tax credits for wind and solar. The renewable electricity production tax credit (PTC) for wind was extended through 2019, with the phaseout starting for facilities beginning construction in 2017.[2] For wind facilities that begin construction during 2017, the credit is reduced by 20%. The credit is reduced by 40% for facilities that begin construction in 2018, and reduced by 60% for facilities that begin construction in 2019.

The 30% investment tax credit (ITC) for business solar was extended through 2019 and the deadline changed from a placed-in-service deadline to a construction start date.[3] The business solar ITC was set to be 26% for facilities beginning construction in 2020 and 22% for facilities beginning construction in 2021, so long as these facilities are placed in service before the end of 2023. The business solar ITC is scheduled to return to 10% in 2022. The tax credit for residential solar was extended through 2021, with a phaseout starting in 2020.

Several provisions in BBA18 provided extensions for energy-tax provisions that matched the longer-term extensions that had been enacted as part of the PATH Act. Specifically, the ITC for nonsolar technologies was extended and modified, such that the phaseout and termination for nonsolar technologies matched what had been established for solar in the PATH Act.[4] Five-year

[1] For an overview of tax extenders, see CRS Report R44677, *Tax Provisions that Expired in 2016 ("Tax Extenders")*, by Molly F. Sherlock.

[2] CRS Report R43453, *The Renewable Electricity Production Tax Credit: In Brief*, by Molly F. Sherlock.

[3] CRS In Focus IF10479, *The Energy Credit: An Investment Tax Credit for Renewable Energy*, by Molly F. Sherlock.

[4] The credit is extended through 2021 for all qualifying technologies. For fiber optic solar energy property, qualified fuel cell property, and qualified small wind property, the credit rate is 30% for property that begins construction before the end of 2019, falling to 26% in 2020 and 22% in 2021. Additionally, property must also be placed in service by the end of 2023 to qualify for the tax. The 10% credit for qualified microturbine property, combined heat and power (CHP) property, and thermal energy property is also extended through 2021.

cost recovery that is generally available to ITC-eligible property, as well as wind property, was also extended through 2021. The tax credit for residential energy-efficient property was also extended through 2021 for nonsolar technologies, with a phaseout in 2020 and 2021.[5] Further discussion of these provisions is not included in this report, as these provisions did not expire in 2017.

Additional energy tax provisions were included in BBA18. Specifically, the law extended the per-barrel excise tax on oil used to fund the oil spill liability trust fund,[6] modified the tax credit for production from advanced nuclear power facilities,[7] and enhanced the carbon dioxide sequestration credit.[8] Again, further discussion of these provisions is not included in this report, as these provisions did not expire in 2017.

There are several options for Congress to consider regarding temporary provisions. The 2017 tax revision (P.L. 115-97) adds new context in considering further extension of expired temporary tax provisions.[9] Broadly, the revised tax system became effective in 2018. Thus, one perspective might be that extending expired provisions through 2017 allows these provisions to remain available up until the revised tax system took effect at the beginning of 2018. Whether the temporary tax provisions that expired at the end of 2017 have a place in the new tax system is a question the 115th Congress may consider. Ultimately, provisions that expired at the end of 2017 could be extended. The extension could be retroactive, such that provisions will be available for all of the 2018 tax year. The extensions also could be short term, long term, or permanent. Another option would be to allow expired provisions to remain expired.

Table 1 provides information on (1) the cost of the one-year extension of expired energy tax provisions in BBA18, over the 2018 to 2027 budget window; and (2) the estimated reduction in federal revenues that would result from making expired energy tax provisions permanent.

[5] The credit was extended for solar water heating property, fuel cell plants, small wind energy property, and geothermal heat pump property. The credit rate is 30% for property placed in service before the end of 2019, falling to 26% in 2020 and 22% in 2021.

[6] CRS In Focus IF10823, *The Oil Spill Liability Trust Fund Tax: Reauthorization Issues and Legislation in the 115th Congress*, by Jonathan L. Ramseur.

[7] CRS Insight IN10725, *The Advanced Nuclear Production Tax Credit*, by Molly F. Sherlock and Mark Holt.

[8] The Section 45Q tax credit is expanded to apply to all carbon oxides for facilities placed into service on or after February 9, 2018, which begin construction by the end of 2023. Credit amounts are also increased for facilities placed in service after February 9, 2018.

[9] CRS Report R45092, *The 2017 Tax Revision (P.L. 115-97): Comparison to 2017 Tax Law*, coordinated by Molly F. Sherlock and Donald J. Marples.

Table 1. Energy Tax Provisions That Expired at the End of 2017

	10-Year Cost Estimate of 1-Year Extension in P.L. 115-123 (billions)	Cost of Permanent Extension—CBO Policy Alternatives Baseline (Before the P.L. 115-97) (billions)
Renewables		
Production Tax Credit (PTC) for Nonwind Facilities	$0.3	$2.8
Alternative and Renewable Fuels		
Incentives for Biodiesel and Renewable Diesel	$3.3	$37.5
Incentives for Alternative Fuel and Alternative Fuel Mixtures	$0.6	$7.4
Alternative Fuel Vehicle Refueling Property	$0.1	$1.4
Second Generation (Cellulosic) Biofuel Producer Credit	-i-	$0.3
Special Depreciation Allowance for Second Generation (Cellulosic) Biofuel Plant Property	-i-	$0.0
Vehicles		
Alternative Motor Vehicle Credit for Qualified Fuel Cell Vehicles	-i-	$0.1
Credit for Two-Wheeled Plug-in Electric Vehicles	-i-	$0.0
Building Energy Efficiency		
Credit for Construction of Energy-Efficient New Homes	$0.3	$3.5
Energy-Efficient Commercial Building Deduction	$0.1	$2.1
Credit for Section 25C Nonbusiness Energy Property	$0.5	$6.5
Other		
Special Rule to Implement Electric Transmission Restructuring	—	$0.0
Credit for Production of Indian Coal	-i-	$0.4

Source: CRS analysis of extending legislation; Joint Committee on Taxation, *List of Expiring Federal Tax Provisions 2016-2027*, January 9, 2018, JCX-1-18; Congressional Budget Office (CBO), *An Update to the Budget and Economic Outlook, Detailed Revenue Projections,* June 2017; and Joint Committee on Taxation, *Estimated Budget Effects of the Revenue Provisions Contained in the "Bipartisan Budget Act of 2018,"* 115th Cong., February 8, 2018, JCX-4-18.

Notes: The cost of permanent extension is as reported by CBO for the 2018 to 2027 budget window. These estimates were prepared before the 2017 tax revision (P.L. 115-97) was enacted. Provisions enacted as part of tax reform, such as the reduced corporate tax rate, may cause changes in the estimated cost of extending certain provisions. An -i- indicates an estimated revenue loss of less than $50 million between 2018 and 2027. An "n/a" means consideration of extension was not applicable, for reasons explained in the text. A "—" means JCT estimated no revenue effect.

Renewable Electricity

Production Tax Credit (PTC) for Nonwind Facilities[10]

The renewable electricity PTC is a per-kilowatt-hour (kWh) credit for electricity produced by a qualified energy resource. Eligible facilities can claim the tax credit for the first 10 years of qualified production. Resources that qualify for the full credit amount, 2.4 cents per kWh in 2017, include wind, closed-loop biomass, and geothermal. Other resources are eligible for a half credit amount, including open-loop biomass, small irrigation power, municipal solid waste, qualified hydropower, and marine and hydrokinetic resources. Under current law, nonwind facilities must have begun construction before January 1, 2017, to be tax-credit eligible.[11]

The PTC was enacted in 1992 as part of the Energy Policy Act (EPACT92; P.L. 102-486). When first enacted, the PTC was available for electricity generated using wind or closed-loop biomass systems. The credit was initially set to expire on June 30, 1999. Since 1999, the PTC has regularly been extended, often as part of "tax extenders" legislation. The credit has also been expanded to include additional qualifying resources. At several points in time, the PTC was allowed to lapse before a retroactive extension was enacted.

Taxpayers can elect to receive a 30% investment tax credit in lieu of the PTC. The ITC in lieu of PTC election was enacted in 2009 alongside the Section 1603 grants in lieu of tax credits that expired at the end of 2011.[12] In recent years, the option to elect the ITC in lieu of the PTC has been extended alongside the PTC in "tax extenders" legislation.

The PTC was enacted in 1992 to promote the "development and utilization of certain renewable energy sources."[13] The 1999 sunset was included to provide an "opportunity to assess the effectiveness of the credit."[14] When the PTC was extended as part of a "tax extenders" package in 1999, Congress noted that the PTC had been important to the development of environmentally friendly renewable power, and extended the credit to promote further development of wind (and other) resources.[15] Subsequent extensions of the PTC reflected a belief that the tax incentive contributed to the development of renewable-energy infrastructure, which advanced environmental and energy policy goals.[16]

Most recently, the PTC was extended for one year for qualifying nonwind technologies, from 2016 through 2017, in BBA18. Previously, a two-year extension of the PTC for nonwind technologies was included in the Protecting Americans from Tax Hikes (PATH) Act of 2015, enacted as Division Q of P.L. 114-113. Division P of the Consolidated Appropriations Act, 2016

[10] Internal Revenue Code (IRC) Section 45(d). IRC Section 48(a)(5) for the investment tax credit (ITC) in lieu of PTC option.

[11] Wind facilities beginning construction after December 31, 2016, may qualify for the PTC at reduced rates. Wind facilities that begin construction after December 31, 2019, will not be eligible for the PTC.

[12] CRS Report R41635, *ARRA Section 1603 Grants in Lieu of Tax Credits for Renewable Energy: Overview, Analysis, and Policy Options*, by Phillip Brown and Molly F. Sherlock.

[13] U.S. Congress, House Committee on Ways and Means, *Comprehensive National Energy Policy Act*, committee print, 102nd Cong., 2nd sess., May 5, 1992, H. Rept. 102-474, pp. 41-42.

[14] Ibid.

[15] U.S. Congress, Joint Committee on Taxation, *General Explanation of Tax Legislation Enacted in the 106th Congress*, committee print, April 19, 2001, JCS-2-01, p. 25.

[16] U.S. Congress, Joint Committee on Taxation, *General Explanation of Tax Legislation Enacted in the 112th Congress*, committee print, February 2013, JCS-2-13, pp. 212-213.

(P.L. 114-113) included a two-year extension of the PTC for wind (through 2016). The PTC for wind was also extended beyond 2016, through 2019, at reduced rates.

One policy rationale for supporting renewable electricity resources is to promote development of renewable-energy infrastructure that may not be technologically mature. With this policy rationale in mind, one question is when technologies have reached the point of maturity such that tax-related federal financial support can be eliminated.

Environmental considerations provide another policy rationale often used to support tax incentives for renewable electricity production. Some suggest that ongoing support for renewables can help address inefficiencies and market failures in energy production markets, where fossil-fuels-based electricity production and the associated pollution effects generate negative externalities. A more direct approach, however, would be to impose a price on pollution, as opposed to subsidizing a nonpolluting alternative.

For more information, see CRS Report R43453, *The Renewable Electricity Production Tax Credit: In Brief*, by Molly F. Sherlock.

Alternative and Renewable Fuels

Incentives for Biodiesel and Renewable Diesel[17]

There are three tax credits for biodiesel: the biodiesel mixture credit, the biodiesel credit, and the small agri-biodiesel producer credit. Each gallon of biodiesel, including agri-biodiesel (biodiesel made from virgin oils), may be eligible for a $1.00 tax credit. The mixtures tax credit may be claimed as an instant excise tax credit against the blender's motor and aviation fuels excise taxes. Credits in excess of excise tax liability may be refunded. The biodiesel and small agri-biodiesel credits may be claimed as income tax credits. The mixtures credit is proportionate to the fraction of biodiesel in the mixture—a blend of 80% diesel with 20% virgin biodiesel would qualify for a 20-cent-per-gallon tax credit. The tax credits for biodiesel expired on December 31, 2017.

Additionally, an eligible small agri-biodiesel producer credit of 10 cents is available for each gallon of "qualified agri-biodiesel production." An eligible "small agri-biodiesel producer" is defined as any person who, at all times during the taxable year, has annual productive capacity for agri-biodiesel not in excess of 60 million gallons. The number of gallons that may be taken into account for the small agri-biodiesel producer credit may not exceed 15 million. The eligible small agri-biodiesel producer credit is effective for taxable years ending after August 8, 2005, and sunsets after December 31, 2017.

The tax code generally treats renewable diesel fuel like biodiesel for the purposes of the biodiesel fuels credit. Thus, renewable diesel sold or used after December 31, 2005, is eligible for a $1.00 per gallon tax credit. Renewable diesel cannot qualify as agri-biodiesel.

The biodiesel tax incentives were introduced under the American Jobs Creation Act of 2004 (P.L. 108-357) and modified and extended by the Energy Policy Act of 2005 (P.L. 109-58). Subsequently, the credits have been extended, most recently through the end of 2017 in BBA2018.

Tax credits for biofuels are motivated by a desire to reduce dependence on petroleum imports (enhance national energy security), address environmental concerns, and maintain farm incomes.

[17] IRC Sections 40A, 6426(c)(6), and 6427(e)(6)(B).

While the use of biofuels continues to increase, offsetting domestic petroleum consumption, it is not clear that the tax incentives are responsible for driving this change. Renewable fuel standards and blend mandates requiring certain amounts of biofuels may be boosting domestic production.[18] If nontax policies are responsible for enhancing biofuel production, and tax policies fail to induce additional production, the tax credits provide a windfall to taxpayers without necessarily resulting in additional use of biofuels.

Incentives for Alternative Fuel and Alternative Fuel Mixtures[19]

The tax code provides tax credits for alternative fuels and alternative fuel mixtures. Specifically, there is a 50-cents-per-gallon excise tax credit for certain alternative fuels used as fuel in a motor vehicle, motor boat, or airplane and a 50-cents-per-gallon credit for alternative fuels mixed with a traditional fuel (gasoline, diesel, or kerosene) for use as a fuel. Qualifying fuels include liquefied petroleum gas; P Series fuels (certain renewable, nonpetroleum, liquid fuels); compressed or liquefied natural gas (CNG or LNG); any liquefied fuel derived from coal or peat through the Fischer-Tropsch process which meets certain carbon-capture requirements; liquefied hydrocarbons derived from biomass; and liquefied hydrogen. For propane, CNG, and LNG sold after December 31, 2015, the tax credit is based on gasoline-gallon or diesel-gallon equivalent. No fuel produced outside of the United States is eligible for the alternative fuels tax incentives.

The incentives of alternative fuel and alternative fuel mixtures were introduced under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU; P.L. 109-59). Initially the credits were to be available through September 30, 2009 (September 30, 2014, for hydrogen). The credit, however, has subsequently been extended. Most recently the incentives were extended through the end of 2017 in BBA2018.

Tax credits for alternative fuels are motivated by a desire to reduce dependence on petroleum imports (enhance national energy security), address environmental concerns, and maintain farm incomes.

Alternative Fuel Vehicle Refueling Property[20]

A 30% tax credit is provided for the cost of any qualified alternative fuel vehicle refueling property installed by a business or at a taxpayer's principal residence. The credit is limited to $30,000 for businesses at each separate location, and $1,000 for residences.

Clean fuel refueling property is generally any tangible equipment (such as a pump) used to dispense a fuel into a vehicle's tank. Qualifying property includes fuel storage and dispensing units and electric vehicle recharging equipment. A clean fuel is defined as any fuel at least 85% of the volume of which consists of ethanol (E85) or methanol (M85), natural gas, CNG, LNG, liquefied petroleum gas, and hydrogen, or any mixture of biodiesel and diesel fuel, determined without regard to any use of kerosene and containing at least 20% biodiesel. For the purposes of the credit, electricity is also considered a clean fuel.

For business taxpayers, the taxpayer's basis in the property is reduced by the amount of the credit. The credit for business property is treated as a portion of the general business credit. As part of the general business credit, unused credits may be carried back for one year or carried forward for 20 years. For nonbusiness property, the credit cannot exceed the excess of an individual's income

[18] CRS Report R43325, *The Renewable Fuel Standard (RFS): An Overview*, by Kelsi Bracmort.

[19] IRC Sections 6426(d)(5), 6427(e)(6)(C), and 6426(e)(3).

[20] IRC Section 30C(g).

tax liability over the sum of nonrefundable personal credits and the foreign tax credit over the taxpayer's tentative minimum tax. No credit is available for property used outside the United States. For property sold to a tax-exempt entity, the seller of the property may be able to claim the credit.

The credit for alternative fuel vehicle refueling property was introduced under the Energy Policy Act of 2005 (EPACT05; P.L. 109-58). The credit replaced a previously available deduction for business investment in clean fuel refueling property. The credit has been extended multiple times since being enacted in 2005; most recently, the incentives were extended through the end of 2017 in BBA2018.

Tax credits for alternative fuel vehicle refueling property reduce after-tax capital costs to attract investment. Additionally, nontax federal incentives may also promote investment in alternative fuel vehicle refueling property. From an economic perspective, allowing special tax credits for selected technologies can distort the allocation of resources, and may create economic inefficiencies by encouraging investments in high-cost technologies, ones that would not otherwise be economical at current and expected prices and rates of return. However, the incentive may improve the allocation of resources, if it corrects a market failure.

Second Generation (Cellulosic) Biofuel Producer Credit[21]

The second generation biofuels producer credit is a nonrefundable income tax credit for each gallon of qualified second generation biofuel production. The amount of the credit per gallon is generally $1.01. Qualified second generation biofuel production is second generation biofuel produced by the taxpayer and sold by the taxpayer to another person for use (1) in the production of a qualified biofuel fuel mixture in such person's trade or business (other than casual off-farm production), (2) as a fuel in a trade or business, or (3) as biofuel sold at retail to another person and placed in the fuel tank of such other person. Qualifying fuel must be produced and used in the United States. Cellulosic biofuel is produced using lignocellulosic or hemicellulosic matter available on a renewable or recurring basis. Qualified feedstocks for second generation biofuels include cultivated algae, cyanobacteria, or lemna.

The cellulosic biofuel producer credit was introduced by the Food, Conservation, and Energy Act of 2008 (P.L. 110-246). When introduced, the credit was scheduled to expire December 31, 2012. The American Taxpayer Relief Act of 2012 (ATRA; P.L. 112-240) modified the provision to algae-based fuels, changing the title of the provision to be the second generation biofuel producer credit at the same time. It has subsequently been extended as part of "tax extenders." Most recently the incentive was extended through the end of 2017 in BBA2018.

Tax credits for second generation biofuels are motivated by a desire to reduce dependence on petroleum imports (enhance national energy security), address environmental concerns, and maintain farm incomes. Renewable fuel standards and blend mandates requiring certain amounts of biofuels may be boosting domestic production, but until recently second generation cellulosic biofuels were not economically competitive with other renewable fuel standards options.[22]

[21] IRC Section 40(b)(6)(J).

[22] CRS Report R43325, *The Renewable Fuel Standard (RFS): An Overview*, by Kelsi Bracmort.

Special Depreciation Allowance for Second Generation (Cellulosic) Biofuel Plant Property[23]

Second generation biofuel plant property allows for the immediate first-year bonus depreciation of 50% of the cost of facilities that produce eligible biofuels. Previous federal tax law limited the eligibility for first-year bonus depreciation of cellulosic biofuels to facilities producing ethanol; those producing nonethanol fuels from cellulosic feedstocks did not qualify for the allowance.

The special depreciation allowance for second generation biofuel plant property was introduced by the Tax Relief and Health Care Act of 2006 (P.L. 109-432). Most recently the incentive was extended through the end of 2017 in BBA2018. Allowing half the cost to be expensed when incurred provides a benefit because a tax deduction today is worth more than a tax deduction in the future, due to the time value of money (interest). From an economic perspective, allowing a special depreciation allowance for selected technologies can distort the allocation of resources, and may create economic inefficiencies. However, this incentive may also increase economic efficiency to the extent it addresses a market failure.

Vehicles

Alternative Motor Vehicle Credit for Qualified Fuel Cell Vehicles[24]

Fuel cell vehicles (vehicles propelled by chemically combining oxygen with hydrogen to create electricity) may qualify for a federal tax credit. The credit is based on vehicle weight, with vehicles weighing 8,500 pounds or less having a base credit amount of $4,000. Heavier vehicles may be eligible for larger credits, with the highest credit amount being $40,000 for vehicles weighing more than 26,000 pounds. Cars and light trucks can qualify for an additional tax credit of $1,000 to $2,000 per vehicle depending on fuel economy.

The alternative technology vehicle tax credit was enacted as part of the Energy Policy Act of 2005 (P.L. 109-58). The credit replaced a previously available clean-fuel-vehicle deduction (IRC Section 179A). When enacted, the tax credit for fuel cell vehicles was available for vehicles placed in service during 2006 through 2014. Alternative technology vehicle tax credits were available for hybrid, advanced lean-burn technology, and alternative fuel vehicles. The credits generally expired in 2009 or 2010 for vehicles other than fuel cell vehicles. After 2014, the credit for fuel cell vehicles has been extended as part of "tax extenders." Most recently, the provision was extended through 2017 in BBA2018.

Tax incentives for fuel cell vehicles may help address market failures in automobile markets. Specifically, if consumers fail to consider the negative environmental and potential energy security concerns associated with conventional gasoline- and diesel-fueled vehicles, the market may provide an inefficiently high level of such products. One way to address the negative externalities associated with fuel consumption through automobile use is to reduce the price of alternative technology vehicles.

There are other barriers to adoption of alternative-technology vehicles a tax credit might address. These include, for example, (1) the high up-front cost associated with alternative-technology vehicles, (2) the volatility of fuel prices, (3) technology risks associated with new, unfamiliar, or

[23] IRC Section 168(l).

[24] IRC Section 30B(k)(1).

unproven technologies, and (4) a lack of complementary infrastructure (such as hydrogen fueling stations).

Because tax credits for fuel cell vehicles reduce the price of such vehicles relative to gasoline- and diesel-powered alternatives, such tax credits are intended to address the previously noted market failures and market barriers. A tax credit approach, however, may not be the most economically efficient mechanism for addressing the negative externalities associated with gasoline consumption and market barriers to fuel cell vehicle adoption. Relative to tax credits, rising gas prices have played a larger role in increasing consumer demand for alternative technology vehicles. Taxing gasoline directly—the activity associated with the negative externality—is arguably more economically efficient than subsidizing the purchase of select vehicles.

Credit for Two-Wheeled Plug-In Electric Vehicles[25]

A credit is available for two-wheeled plug-in vehicles acquired during 2015 or 2016. The credit is equal to 10% of the vehicle's cost, up to $2,500. To be eligible for the tax credit vehicles must have a weight rating of less than 14,000 pounds; be propelled by a battery-powered electric motor with a battery capacity of at least 2.5 kilowatt hours; be manufactured for use on streets, roads, and highways; and be capable of achieving a speed of at least 45 miles per hour.

The American Recovery and Reinvestment Act (ARRA; P.L. 111-5) provided a tax credit for two- or three-wheeled vehicles, as well as low-speed four-wheeled vehicles. When enacted, the provision was scheduled to expire at the end of 2011. In ATRA, the provision was extended through 2013 for two- and three-wheeled vehicles, but not low-speed vehicles. No credit was available in 2014. The provision was reinstated for two-wheeled vehicles in the PATH Act of 2015 (Division Q of P.L. 114-113), and extended through 2017 in BBA2018.

Credits for two-wheeled plug-in electric vehicles were enacted as a unique provision, since they do not qualify for other plug-in electric vehicle tax credits.[26] Tax credits for such vehicles can support emerging technologies, or encourage consumers to purchase vehicles that might be more energy efficient than conventional alternatives. Some have raised concerns regarding the equity of vehicles tax benefits, noting that they tend to be largely claimed by high-income taxpayers. If these taxpayers would have bought qualifying vehicles absent tax benefits, then the tax incentives are not leading to additional purchases and are providing a windfall benefit to purchasers.

Building Energy Efficiency

Credit for Construction of Energy-Efficient New Homes[27]

Before 2017, contractors building energy-efficient homes and producers of manufactured energy-efficient homes were eligible for a tax credit for each qualifying new home they built. The amount of the credit was equal to $2,000 per home for homes built by contractors and $1,000 per manufactured home.

[25] IRC Section 30D(g)(3)(E)(ii).

[26] See the new qualified plug-in electric-drive vehicle credit, IRC Section 30D.

[27] IRC Section 45L(g).

To be eligible, an energy-efficient new home was required to have annual heating and cooling consumption that was at least 50% (30% in the case of manufactured homes) below a comparable unit. The home was also required to be in accordance with the standards of the 2006 International Energy Conservations Code.[28] Contractors and manufacturers claiming this credit were required to submit certification to an eligible certifier before claiming the credit. This credit was part of the general business credit and hence could be carried back one year and carried forward 20 years.

The tax credit for energy-efficient new homes was introduced under the Energy Policy Act of 2005 (P.L. 109-58). Initially, the credit was set to expire at the end of 2007. It was subsequently extended several times.[29] Most recently, the credit was extended through the end of 2017 in BBA2018.

The tax credit is designed to encourage home builders to install energy-efficient technologies in new homes. Energy-efficient new homes tend to have higher up-front costs, and it is not clear if market prices accurately reflect or capitalize the value of energy-efficient improvements. If energy efficiency is not accurately reflected in housing prices, builders may underinvest in efficiency technologies absent the credit. On the other hand, if market prices do reflect the cost associated with these technologies, the credit may be a windfall gain to the builder.

Energy-Efficient Commercial Building Deduction[30]

A deduction is allowed for certain energy-saving property used in domestic commercial buildings.[31] Qualifying energy-efficient commercial building property includes property installed as part of (1) the interior lighting system; (2) the heating, cooling, ventilation, or hot water system; or (3) the building envelope. To be deductible, property must reduce a building's annual energy and power costs by 50% or more as compared to a similar reference building meeting the minimum energy standards described in Standard 90.1-2007 of ASHRAE/IESNA.[32] The maximum deduction allowed is $1.80 per square foot. A reduced deduction may be available if a single system is upgraded (lighting, heating and cooling, or building envelope) and the 50% reduction threshold is not met. Separate energy cost reduction percentage thresholds are specified for single-system upgrades. The maximum deduction for a single-system improvement is $0.60 per square foot. Government entities making energy-efficiency upgrades to public buildings, such

[28] In addition, heating and cooling equipment efficiency must correspond to the minimum allowed under the regulations established by the Department of Energy pursuant to the National Appliance Energy Conservation Act of 1987 (P.L. 100-12) in effect at the time construction is completed. Qualified homes must be constructed such that building-envelope components contribute at least a fifth of the 50% in required energy consumption reduction (1/3 of 30% in required energy consumption reduction in the case of manufactured homes). Energy Star labeled homes may qualify for the tax credit.

[29] The Tax Relief and Health Care Act of 2006 (P.L. 109-432) extended the credit through December 31, 2008. The Emergency Economic Stabilization Act of 2009 (EESA; P.L. 110-343) extended the credit through December 31, 2009. The Tax Relief, Unemployment Insurance Reauthorization and Job Creation Act of 2010 (P.L. 111-312) extended the credit through December 31, 2011. The American Taxpayer Relief Act of 2012 (P.L. 112-240) extended the credit until December 31, 2013, and adopted the 2006 International Energy Conservation Code.

[30] IRC Section 179D(h).

[31] For a more detailed overview, see CRS Committee Print CP10002, *Tax Expenditures: Compendium of Background Material on Individual Provisions — A Committee Print Prepared for the Senate Committee on the Budget, 2016*, by Jane G. Gravelle et al., pp. 107-113.

[32] American Society of Heating, Refrigerating, and Air Conditioning Engineers and the Illuminating Engineering Society of North America standards.

as schools, can allocate the Section 179D deduction to designers of energy-efficient commercial building property.

The deduction for energy-efficient commercial building property was enacted in the Energy Policy Act of 2005 (EPACT05; P.L. 109-58). When first enacted, the deduction was scheduled to be available for the 2006 and 2007 tax years. The deduction was extended for one year, through 2008, in "tax extenders" legislation enacted late in 2006 (the Tax Relief and Health Care Act of 2006 [P.L. 109-432]). A longer-term (five-year) extension was enacted in the Emergency Economic Stabilization Act (P.L. 110-343). A stated rationale claimed

> [t]he Congress recognizes that a substantial portion of U.S. energy consumption is attributable to commercial buildings, and that the design and construction of commercial buildings is a multi-year process. Hence, the Congress believes that a long-term extension of the deduction for energy efficient commercial buildings is necessary to ensure that buildings currently in the design phase will be able to claim the deduction.[33]

Since 2014, short-term extensions of the deduction for energy-efficient commercial building property have been included in "tax extenders" legislation. Most recently, the provision was extended through 2017 in BBA2018.

The business profit-maximizing (average cost-minimizing) objective should, in theory, promote an economically efficient level of investment in energy-saving property. However, market outcomes may lead to less investment in building energy efficiency than is socially desirable if (1) consumption of energy has negative external costs, such as pollution, that are not considered when building owners make energy property decisions (there are "negative externalities" associated with building energy consumption); or (2) if the person choosing the energy equipment is not the same person responsible for paying the energy bills (there is a "principal-agent" issue), and energy-savings investments cannot be recouped via higher rents or appreciated asset value. In these circumstances, federal financial assistance, through a tax incentive, for example, may improve upon market outcomes. The tax deduction may not be the most economically efficient way to address market inefficiency. If building energy consumption is associated with pollution-related negative externalities, a direct price on pollution would arguably be a more economically efficient policy.

There are also some considerations related to the specifics of the deduction for energy-efficient commercial property. Most of the deduction is claimed by taxpayers constructing new buildings, since the energy-efficiency threshold is tied to recent efficiency standards, making it more difficult for older buildings to complete retrofits that meet energy-savings targets tied to recent building standards. Meeting certification requirements can also be costly and burdensome, potentially preventing certain taxpayers from claiming the deduction. Conversely, stringent certification requirements can help prevent fraudulent deduction claims.

Credit for Section 25C Nonbusiness Energy Property[34]

The nonbusiness energy property tax credit provides homeowners with a nonrefundable[35] tax credit for investments in both high-efficiency energy property (e.g., heating, cooling, and water-

[33] U.S. Congress, Joint Committee on Taxation, *General Explanation of Tax Legislation Enacted in the 110th Congress*, committee print, March 2009, JCS-1-09, p. 344.

[34] IRC Section 25C(g).

[35] Nonrefundable tax credits cannot exceed a taxpayer's income tax liability, meaning those taxpayers with little to no tax liability generally cannot claim these tax benefits.

heating appliances) and investments in certain energy-efficiency improvements (e.g., energy-efficient insulation, windows, and doors).

For installations made during 2011 through 2017, the amount of the credit was calculated as 10% of expenditures on building-envelope improvements plus the cost of each energy-efficient property capped at a specific amount (ranging from $50 to $300), excluding labor and installation costs.[36] Given the price of high-efficiency heating, cooling, and water-heating appliances, taxpayers generally claimed the maximum amount of the credit for energy-efficient property. In addition, the credit was subject to a lifetime cap of $500 per taxpayer.

Residential energy-efficiency tax credits were first introduced in the late 1970s, but were allowed to expire in 1985. EPACT05 (P.L. 109-58) enacted the Section 25C credit as a temporary provision in effect for 2006 and 2007. This nonrefundable tax credit was equal to 10% of qualified expenditures, subject to certain limitations for specific types of property and a $500 lifetime limitation per taxpayer. At the end of 2007, the Section 25C credit expired. In 2008, the Emergency Economic Stabilization Act of 2008 (EESA; P.L. 110-343) reinstated and modified the Section 25C credit for the 2009 tax year. The American Recovery and Reinvestment Act of 2009 (ARRA; P.L. 111-5) further extended the credit for two years (2009 and 2010) as well as expanded it. Under ARRA, the credit equaled 30% of qualified expenditures for energy-efficiency improvements and energy property, eliminating the technology-specific credit amounts.[37] In addition, the lifetime credit cap was lifted from $500 to $1,500 for 2009 and 2010. These changes expired at the end of 2010 and the credit as structured *before ARRA* (10% of expenditures subject to a $500 lifetime cap) was subsequently extended several times on a temporary basis. The 25C credit was extended for two years—2015 and 2016—by the PATH Act of 2015 (Division Q of P.L. 114-113) and extended through 2017 in BBA2018.

The amount of the investment resulting from the 25C credit is unclear. Some researchers found that tax incentives that reduced the price of energy-efficiency property would lead to additional investment.[38] Others found that the tax credits were instead more likely associated with windfall gains to credit recipients as opposed to additional energy-efficiency investment.[39] Further, the fact that the incentive is delivered as a nonrefundable credit limits the provision's ability to motivate investment for low- and middle-income taxpayers with limited tax liability. The administration of residential energy-efficiency tax credits has also had compliance issues, as identified in a Treasury Department Inspector General for Tax Administration (TIGTA) report.[40]

[36] For more information on energy related caps, see CRS Report R42089, *Residential Energy Tax Credits: Overview and Analysis*, by Margot L. Crandall-Hollick and Molly F. Sherlock.

[37] The changes that ARRA made to the Section 25C credit in 2009 superseded the 2009 changes that had been made to the credit by EESA.

[38] See Kevin A. Hassett and Gilbert E. Metcalf, "Energy Tax Credits and Residential Conservation Investment: Evidence from Panel Data," *Journal of Public Economics*, vol. 57, no. 2 (June 1995), pp. 201-217.

[39] See Michael J. Walsh, "Energy Tax Credits and Housing Improvement," *Energy Economics*, vol. 11, no. 4 (October 1989), pp. 275-284 and Jeffery A. Dubin; and Steven E. Henson, "The Distributional Effects of the Federal Energy Tax Act," *Resources and Energy*, vol. 10, no. 3 (1988), pp. 191-212.

[40] Treasury Inspector General For Tax Administration, *Processes Were Not Established to Verify Eligibility for Residential Energy Credits*, Reference Number: 2011-41-038, April 19, 2011, http://www.treasury.gov/tigta/auditreports/2011reports/201141038fr.pdf.

Other Expired Energy Tax Provisions

Special Rule to Implement Electric Transmission Restructuring[41]

IRC Section 451(i) permits taxpayers to elect to recognize any capital gain from the sale of qualifying electricity transmission property to an independent transmission company (ITC), pursuant to a Federal Energy Regulatory Commission (FERC) restructuring policy, evenly over eight years beginning with the year of the sale. The sale proceeds must be reinvested in other electricity assets within four years. This special tax incentive is available for sales made through December 31, 2017.

Generally, any gain realized from a sale or disposition of a capital asset is recognized in the tax year in which the gain was realized, unless there is a specific exemption or deferral. The recognition of gain over eight years, rather than in the year of sale, is a deferral, rather than a complete forgiveness, of tax liability. The economic benefit derives from the reduction in the present value of the tax owed below what the tax would otherwise be if it were required to be recognized in the year of sale.

The deferral of gain on the sale of transmission assets was enacted on a temporary basis as part of the American Jobs Creation Act of 2004 (P.L. 108-357), with the goal of encouraging energy transmission infrastructure reinvestment and assisting those in the industry who are restructuring. It is intended to foster a more competitive industry by facilitating the unbundling of transmission assets held by vertically integrated utilities. Under restructuring, states and Congress have considered rules requiring the separate ownership of generation and distribution and transmission assets. However, vertically integrated electric utilities still own a large segment of the nation's transmission infrastructure. The tax provision encourages the sale of transmission assets by vertically integrated electric utilities—the unbundling of electricity assets—to independent system operators or regional transmission organizations, who would own and operate the transmission lines. The provision is intended to improve transmission management and service, and facilitate the formation of competitive electricity markets. In recent years, this provision has been extended as part of "tax extenders" legislation. Most recently, the provision was extended through 2017 in BBA2018.

The restructuring of the electric power industry has resulted in significant reorganization of power assets, and may continue to do so. In particular, it may result in a significant disposition of transmission assets and possibly, depending on the nature of the transaction, trigger an income tax liability and interfere with industry restructuring. Under an income tax system, the sale for cash of business assets subject to depreciation deductions triggers a tax on taxable income in the year of sale to the extent of any gain. Corporations pay capital gains on sales of capital assets, such as shares of other corporations. But gains on the sale of depreciable assets involve other rules. For example, sales of personal property, such as machinery, are taxed partly as capital gains and partly as ordinary income. The overall taxable amount is the difference between the sales price and basis, which is generally the original cost minus accumulated depreciation. That amount is taxed as ordinary income to the extent of previous depreciation allowances (depreciation is "recaptured").

[41] IRC Section 451(i).

Credit for Production of Indian Coal[42]

The credit for Indian coal production provides a tax credit for Indian coal produced from reserves, which on June 14, 2005, were owned by an Indian tribe or held in trust by the United States for a tribe. The amount of the credit is $2.00 per ton (adjusted for inflation; $2.387 per ton in 2016). The credit is available for coal sold after December 31, 2005, and before January 1, 2018. The coal does not need to be sold for the production of electricity or any specific purpose. Before 2015, the credit was only available for Indian coal produced at facilities that were placed in service before January 1, 2009.

Indian coal was added to the production tax credit (PTC) as a new qualifying resource by the Energy Policy Act of 2005 (P.L. 109-58). When enacted, the credit was available for coal sold to an unrelated third party during the seven-year period beginning after December 31, 2005, and ending before January 1, 2013. The credit was $1.50 per ton of coal sold during the first four years of the period, and $2.00 per ton for coal sold during the last three years of the period. Congress extended the credit for Indian coal for one year in ATRA, reasoning such an extension would "encourage continued mining of coal resources on Indian lands."[43] The credit has subsequently been extended as part of "tax extenders." In addition to extending the credit through 2016, the PATH Act modified the provision, removing the January 1, 2009, placed-in-service requirement and modifying the third party sale requirement. The PATH Act also exempts the credit from the alternative minimum tax (AMT). The credit for the production of Indian coal was extended through 2017 in BBA2018.

Proponents of the Indian coal production tax credit have argued the credit helps compensate Indian coal producers for more restrictive regulatory requirements faced by coal producers on Indian lands, and encourages investment and jobs on Indian lands.[44] Concerns related to the credit include environmental and social considerations related to the use of coal-fired power.[45]

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[42] IRC Section 45(e)(10)(A).

[43] U.S. Congress, Joint Committee on Taxation, *General Explanation of Tax Legislation Enacted in the 112th Congress*, committee print, February 2013, JCS-2-13, p. 211.

[44] Adam Lidgett, "Mont. Sens. Float Bill To Extend Indian Coal Tax Credit," *Law360*, April 28, 2017, available at https://www.law360.com/articles/918463/mont-sens-float-bill-to-extend-indian-coal-tax-credit.

[45] Valerie Volcovici, "In Montana's Indian country, tribes take opposite sides on coal," *Reuters*, August 21, 2017, available at http://www.reuters.com/article/us-usa-trump-energy-tribes-insight/in-montanas-indian-country-tribes-take-opposite-sides-on-coal-idUSKCN1B10D3.

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