

**TAX EXPENDITURES FOR ENERGY PRODUCTION
AND CONSERVATION**

Scheduled for a Public Hearing
Before the
SENATE COMMITTEE ON FINANCE
on April 23, 2009

Prepared by the Staff
of the
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I. INTRODUCTION AND SUMMARY TABLES

The Senate Committee on Finance has scheduled a public hearing on April 23, 2009, titled “Technology Neutrality in Energy Tax: Issues and Options.” Since 2004, the Congress has been very active in promulgating legislation related to energy production (including oil and gas and renewables) and conservation. Part II of this document,¹ prepared by the staff of the Joint Committee on Taxation, provides a description of present law tax expenditures for energy production and conservation. These tax provisions vary widely, and are summarized in the tables that follow. In addition to the energy specific tax expenditures, energy sector producers and manufacturers may also benefit from other general tax expenditures, such as the section 199 deduction for income attributable to domestic production activities, additional first year depreciation (“bonus depreciation”), the lower rates of tax on the first \$10 million of corporate taxable income, and, in general, the deferral of tax on active business income derived by foreign subsidiaries.

The various tax benefits create incentives that have the potential to affect economic decisions and allocate economic resources from other uses to the tax-favored uses. Such tax preferences may produce an allocation of resources that is more efficient for society at large if they are properly designed to overcome negative effects (such as atmospheric pollution, for example) that would otherwise result from a purely market based outcome without any government intervention. The extensive variety of tax expenditures for energy production and conservation have been criticized for lacking well defined objectives, and for lacking coordination among provisions having similar objectives. Some argue that the simultaneous existence of tax preferences for the fossil fuel industry and for renewable energy production represents an incoherent government policy. Others have noted that the incentives for renewable energy and conservation are not themselves designed in a coordinated way to produce the most efficient or equitable subsidies for renewable energy and conservation.

Part III of this document provides the staff of the Joint Committee on Taxation’s most recent estimates of tax expenditures in the energy sector, a brief discussion of the economic rationale for certain government intervention in energy markets through the tax code, and issues related to the proper design of such tax preferences.

¹ This document may be cited as follows: Joint Committee on Taxation, *Tax Expenditures for Energy Production and Conservation* (JCX-25-09R) April 21, 2009. This document can also be found on our website at www.jct.gov.

A. Summary of Credit for Electricity Produced from Certain Renewable Resources			
Eligible electricity production activity (sec. 45)	Credit amount for 2008³ (cents per kilowatt-hour)	Credit period for facilities placed in service on or before August 8, 2005 (years from placed-in-service date)	Credit period for facilities placed in service after August 8, 2005 (years from placed-in-service date)
Wind	2.1	10	10
Closed-loop biomass	2.1	10 ¹	10
Open-loop biomass (including agricultural livestock waste nutrient facilities)	1.0	5 ²	10
Geothermal	2.1	5	10
Solar (pre-2006 facilities only)	2.1	5	10
Small irrigation power	1.0	5	10
Municipal solid waste (including landfill gas facilities and trash combustion facilities)	1.0	5	10
Qualified hydropower	1.0	N/A	10
Marine and hydrokinetic	1.0	N/A	10

¹ In the case of certain co-firing closed-loop facilities, the credit period begins no earlier than October 22, 2004.

² For certain facilities placed in service before October 22, 2004, the five-year credit period commences on January 1, 2005.

³ Inflation adjusted amounts for 2009 are not yet available.

B. Summary of Certain Renewable and Alternative Fuel Incentives

Fuel Type	Per Gallon Incentive Amount	Incentive Expires
Agri-biodiesel and biodiesel	\$1.00 per gallon, plus \$0.10 per gallon for small agri-biodiesel producers	December 31, 2009
Renewable diesel	\$1.00 per gallon	December 31, 2009
Alcohol fuel (not ethanol and other than from natural gas or coal)	\$0.60 per gallon	December 31, 2010
Ethanol fuel	\$0.45 per gallon, plus \$0.10 per gallon for small producers	December 31, 2010
Cellulosic biofuel	\$1.01 per gallon (for alcohol, \$1.01 per gallon less the amount of the alcohol fuel mixture credit and small ethanol producer's credit in effect at the time of production)	December 31, 2012
Alternative fuel: <ul style="list-style-type: none"> • liquefied petroleum gas • P Series Fuels • compressed or liquefied natural gas • liquefied hydrogen • any liquid fuel derived from coal through the Fischer-Tropsch process • compressed or liquified gas derived from biomass • liquid fuel derived from biomass 	\$0.50 per gallon	December 31, 2009 (September 30, 2014, in the case of liquefied hydrogen)

C. Summary of Investment Tax Credit Energy Production Incentives

		Credit rate	Maximum credit	Expiration
Energy credit (sec. 48)	Equipment to produce a geothermal deposit	10%	none	None
	Equipment to use ground or ground water for heating or cooling	10%	none	December 31, 2016
	Microturbine property (< 2 Mw electrical generation power plants of >26% efficiency)	10%	\$200 per Kw of capacity	December 31, 2016
	Combined heat and power property (simultaneous production of electrical/mechanical power and useful heat > 60% efficiency)	10%	none	December 31, 2016
	Solar electric or solar hot water property	30% (10% after December 31, 2016)	none	None
	Fuel cell property (generates electricity through electrochemical process)	30%	\$1,500 for each ½ Kw of capacity	December 31, 2016
	Small (<100 Kw capacity) wind electrical generation property	30%	none	December 31, 2016

D. Summary of Energy Conservation Credits

	Credit rate or amount	Maximum credit	Expiration	
Personal credits:				
Nonbusiness energy property credits (sec. 25C)	Insulation to international energy conservation code standard	30 %	\$1,500	December 31, 2010
	Energy efficient Windows, doors, skylights, roofs	30 %	\$1,500	December 31, 2010
	Advanced main air circulating fans	30 %	\$1,500	December 31, 2010
	Qualified natural gas, propane, or oil furnace or hot water boilers	30 %	\$1,500	December 31, 2010
	Electric heat pump water heaters or natural gas, propane, or oil water heaters	30 %	\$1,500	December 31, 2010
	Central air conditioners	30 %	\$1,500	December 31, 2010
	Biomass fuel property (wood stoves)	30 %	\$1,500	
Residential energy efficient property credits (sec. 25D)	Residential solar water heating or solar electric property	30 %	none	December 31, 2016
	Residential small wind property	30 %	none	December 31, 2016
	Residential geothermal heat pump property	30 %	none	December 31, 2016
	Residential fuel cell property	30 %	\$500 per half kilowatt of capacity	December 31, 2016
Business Credits:				
Manufacturer credit for new energy efficient home (sec. 45L)	Homes 30% more efficient than standard	\$1,000 per home	none	December 31, 2009
	Homes 50% more efficient than standard	\$2,000 per home	none	December 31, 2009
Manufacturer credit for energy efficient appliances (sec. 45M)	Dishwashers	\$45	(1)	December 31, 2009
	Dishwashers (higher efficiency standard)	\$75	(1)	December 31, 2010
	Clothes washers	\$125	(1)	December 31, 2009
	Clothes washers (higher efficiency standard)	\$150	(1)	December 31, 2010
	Clothes washers (highest efficiency standard)	\$250	none	December 31, 2010
	Refrigerators	\$75	(1)	December 31, 2009
	Refrigerators (higher efficiency standard)	\$100	(1)	December 31, 2010
Refrigerators (highest efficiency standard)	\$200	none	December 31, 2010	

¹ A given manufacturer may not claim credits in excess of an aggregate of \$75 million for taxable years beginning after December 31, 2007, with respect to all credits excepting the \$200 credit for refrigerators and the \$250 credit for clothes washers.

E. Summary of Alternative Fuel Vehicle Credits

Type of Property	Description of Qualifying Property	Credit Amount and Explanation	Expiration
<p>Fuel cell vehicles (sec. 30B)</p>	<p>Vehicles propelled by chemically combining oxygen with hydrogen and creating electricity</p>	<ul style="list-style-type: none"> • Base credit of \$8,000 (reduced to \$4,000 after 2009) for vehicles weighing 8,500 pounds or less • Heavier vehicles can get up to a \$40,000 credit, depending on weight • An additional \$1,000 to \$4,000 credit is available to cars and light trucks to the extent fuel economy exceeds 2002 base fuel economy 	<p>12/31/2014</p>
<p>Hybrid vehicles (sec. 30B)</p>	<p>Vehicles powered by internal combustion engine and a rechargeable energy storage system (e.g. batteries)</p>	<ul style="list-style-type: none"> • Base credit of \$400 to \$2,400 for cars and light trucks (weighing 8,500 pounds or less) depending on amount by which fuel economy exceeds 2002 base fuel economy • Additional conservation credit for cars and light trucks of between \$250 and \$1,000 depending on estimated lifetime fuel savings relative to a comparable 2002 model year vehicle powered solely by a gasoline or diesel engine • For heavy hybrid vehicles, the credit varies between 20 and 40 percent of the incremental cost depending on the amount by which the fuel economy of the vehicle exceeds that of a comparable vehicle. The maximum credit is \$7,500 for vehicles weighing 14,000 pounds or less; \$15,000 for vehicles weighing more than 14,000 pounds but less than 26,000 pounds; \$30,000 for vehicles weighing more than 26,000 pounds. 	<ul style="list-style-type: none"> • 12/31/2009 for cars and light trucks weighing 8,500 pounds or less • 12/31/2010 for heavier vehicles • 60,000 vehicle per manufacturer limitation applies to cars and light trucks

Summary of Alternative Fuel Vehicle Credits (cont'd)

Type of Property	Description of Qualifying Property	Credit Amount and Explanation	Expiration
<p>Lean burn vehicles (sec. 30B)</p>	<ul style="list-style-type: none"> • Cars and light trucks with internal combustion engines designed to use more air than necessary for complete combustion that incorporate direct injection and achieve at least 125 percent of the 2002 model year city fuel economy • Commonly referred to as clean diesel cars and trucks 	<p>Credit calculation is the same as for hybrid passenger vehicles and light trucks.</p>	<ul style="list-style-type: none"> • 12/31/2010 • 60,000 vehicle per manufacturer limitation
<p>Alternative fuel vehicles (sec. 30B)</p>	<ul style="list-style-type: none"> • Vehicles that run solely on compressed natural gas, liquefied natural gas, liquefied petroleum gas, hydrogen, or any liquid fuel that is at least 85 percent methanol • Vehicles that run on a fuel mixture 75 percent of which is one of the fuels listed above. 	<ul style="list-style-type: none"> • Credit is 50 percent of the incremental cost of such vehicle above a comparable vehicle, plus an additional 30 percent if the vehicle meets certain emissions standards • Depending on vehicle weight, the maximum allowable credit varies between \$5,000 (for vehicles weighing 8,500 pounds or less) to \$40,000 (for vehicles weighing over 26,000 pounds) • Mixed-fuel vehicles using 90 percent alternative fuel get 90 percent of the credit; those using 75 percent alternative fuel get 70 percent of the credit 	<p align="center">12/31/2010</p>

Summary of Alternative Fuel Vehicle Credits (cont'd)

Type of Property	Description of Qualifying Property	Credit Amount and Explanation	Expiration
Plug-in electric-drive motor vehicles (2009) (sec. 30D)	A four-wheeled vehicle propelled by a battery with at least 4 kilowatt-hours of electricity that can be charged from an external source	<ul style="list-style-type: none"> • Base credit of \$2,500 plus \$417 for each kilowatt-hour of additional battery capacity in excess of 4 kilowatt-hours. • Depending on vehicle weight, the maximum allowable credit varies between \$7,500 (for vehicles weighing 10,000 pounds or less) to \$15,000 (for vehicles weighing over 26,000 pounds) 	<ul style="list-style-type: none"> • 250,000 vehicle overall cap • Modified as described below after 2009
Plug-in electric-drive motor vehicles (after 2009) (sec. 30D)	As described above, but excludes low speed vehicles and vehicles weighing 14,000 or more	Credit is as described above except that the maximum credit is \$7,500 regardless of vehicle weight.	200,000 vehicle per manufacturer limitation
Electric-drive low-speed, motorcycle, and three-wheeled vehicles (sec. 30)	<ul style="list-style-type: none"> • Vehicles otherwise qualifying as plug-in electric-drive vehicles but for the fact that they have limited speed or less than four wheels • Two- and three-wheeled vehicles must have a battery capacity of at least 2.5 kilowatt-hours 	Credit is 10 percent of cost, up to \$2,500.	12/31/2011
Converted plug-in electric-drive vehicles (sec. 30B)	Used vehicles that have been converted into a plug-in electric drive motor vehicle	Credit is 10 percent of conversion cost up to \$4,000.	12/31/2011

Summary of Alternative Fuel Vehicle Credits (cont'd)

Type of Property	Description of Qualifying Property	Credit Amount and Explanation	Expiration
<p>Alternative fuel refueling property (sec. 30C)</p>	<p>Property that dispenses alternative fuels, including ethanol, biodiesel, natural gas, hydrogen, and electricity</p>	<ul style="list-style-type: none"> • For 2009 and 2010, credit is 50 percent of cost of qualified refueling property (other than hydrogen property) installed at a business or principal residence; hydrogen property gets a 30 percent credit • For 2009 and 2010, credit may not exceed \$200,000 for hydrogen refueling property used in a business, \$50,000 for other business refueling property, and \$2,000 for non-hydrogen refueling property installed at a principal residence • For years other than 2009 and 2010, the credit rate is 30 percent, and the maximum allowable credit is \$50,000 for business refueling property and \$1,000 for property installed at a principal residence. 	<ul style="list-style-type: none"> • 12/31/2010 for non-hydrogen refueling property • 12/31/2014 for hydrogen refueling property

F. Summary of Certain Non-Fossil Fuel Capital Cost Recovery Provisions

	Description of Provision	Expiration
Five-year cost recovery for certain energy property (sec. 168(e)(3)(B)(vi))	<ul style="list-style-type: none"> • A five-year MACRS recovery period is generally provided for equipment using solar and wind energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat; equipment using solar energy to illuminate the inside of a structure using fiber-optic distributed sunlight; equipment used to produce, distribute, or use energy derived from a geothermal deposit; and qualified fuel cell property. • A five-year MACRS recovery period is provided for certain biomass property, including (i) a boiler, the primary fuel for which will be an alternate substance; (ii) a burner (including necessary on-site equipment to bring the alternate substance to the burner) for a combustor other than a boiler if the primary fuel for such burner will be an alternate substance; (iii) equipment for converting an alternate substance into a qualified fuel; and (iv) certain pollution control equipment. 	For five-year recovery period for certain solar equipment - December 31, 2016
Special allowance for cellulosic biofuel plant property (sec. 168(l))	An additional first-year depreciation deduction equal to 50 percent of the adjusted basis of qualified cellulosic biofuel plant property.	December 31, 2012
Pollution control facilities (secs. 169, 291)	A taxpayer may elect to recover the cost of any certified pollution control facility over a period of 60 months. A corporation taxpayer must reduce the amount of basis otherwise eligible for the 60-month recovery by 20 percent.	None
Energy efficient commercial buildings deduction (sec. 179D)	A taxpayer may take an additional deduction of \$1.80 per square foot of commercial property that exceeds certain energy efficiency standards	December 31, 2013

G. Summary of Fossil Fuel Capital Cost Recovery Provisions		
	Description of Provision	Expiration
Geological & geophysical expenditures (sec. 167(h))	<ul style="list-style-type: none"> • Geological and geophysical (G&G) expenditures incurred by independent producers and smaller integrated oil companies in connection with domestic oil and gas exploration may be amortized over 24 months. • G&G expenditures incurred by major integrated oil companies are amortized over seven years. 	None
Alaska natural gas pipeline (sec. 168(e)(3)(C)(iii))	Seven-year MACRS recovery period and a class life of 22 years is provided for any natural gas pipeline system located in the State of Alaska that has a capacity of more than 500 billion Btu of natural gas per day and is placed in service after December 31, 2013.	None
Natural gas distribution lines (sec. 168(e)(3)(E)(viii))	Fifteen-year MACRS recovery period and a class life of 35 years is provided for natural gas distribution lines placed in service after April 11, 2005 and before January 1, 2011 provided original use of the property begins with the taxpayer	December 31, 2010
Natural gas gathering lines (sec. 168(e)(3)(C)(iv))	Seven-year MACRS recovery period and 14-year class life is provided for natural gas gathering pipelines.	None
Election to expense 50 percent of qualified property used in refining liquid fuels (sec. 179C)	Taxpayers may elect to expense 50 percent of the cost of qualified refinery property used for processing liquid fuel from crude oil or qualified fuels; remaining 50 percent is recovered under otherwise applicable rules.	December 31, 2013
Special expensing rule for capital costs incurred by small refiners to comply with EPA sulfur regulations (sec. 179B)	A small business refiner may deduct 75 percent of the costs paid or incurred in complying with the Highway Diesel Fuel Sulfur Control requirement of the EPA.	Costs must be paid or incurred on or before December 31, 2009

Summary of Fossil Fuel Capital Cost Recovery Provisions (cont'd)		
	Description of Provision	Expiration
Deduction for tertiary injectants (sec. 193)	Taxpayers engaged in petroleum extraction activities may generally deduct qualified tertiary injectant expenses used while applying a tertiary recovery method.	None
Election to expense intangible drilling costs (secs. 263(c) and 291)	Taxpayers may elect to currently deduct intangible drilling costs (IDCs) paid or incurred with respect to the development of an oil or gas property located in the United States. For an integrated oil company that has elected to expense IDCs, 30 percent of the IDCs on productive wells must be capitalized and amortized over a 60-month period.	None
Depletion (secs. 611-613A)	<ul style="list-style-type: none"> • Depletion is available to any person having an economic interest in a producing oil and gas property. There are generally two types of depletion--cost and percentage depletion. Cost depletion is limited to the taxpayer's basis in the property, whereas percentage depletion is not limited by the basis, but is subject to limitations based on net income derived from the property and taxable income. • Percentage depletion for producing oil and gas property (15 percent rate) is available only to independent producers and royalty owners. For marginal properties, the taxable income limitation is suspended for taxable years ending before January 1, 2010. • Percentage depletion is also available for coal and lignite (10 percent rate) and oil shale (15 percent rate). The percentage depletion deduction coal and lignite is generally reduced by an amount equal to 20 percent of the percentage depletion that exceeds the adjusted basis of the property. 	Suspension of taxable income limitation for marginal properties expires December 31, 2009

H. Summary of Energy Credits Related to Fossil Fuels			
Eligible Activity	Description	Credit Amount	Expiration
Enhanced oil recovery (EOR) credit (sec. 43)	<ul style="list-style-type: none"> • Credit for expenses associated with an EOR project • An EOR project is generally a project that involves the use of one or more tertiary recovery methods to increase the amount of recoverable domestic crude oil 	<ul style="list-style-type: none"> • 15 percent of enhanced oil recovery costs • Currently phased-out 	None
Marginal wells credit (sec. 45I)	Production credit for marginal wells or wells that have an average daily production of not more than 25 barrels per day	<ul style="list-style-type: none"> • \$3-per-barrel credit (adjusted for inflation from 2004) for the production of crude oil from marginal wells • \$0.50-per-1,000-cubic-foot credit (adjusted for inflation from 2004) for the production of natural gas from a marginal wells • Currently phased-out 	None
Indian coal credit (sec. 45)	Production credit for coal produced at facilities placed in service before 2009 that produce coal from reserves that on June 14, 2005 were owned by (or held in trust on behalf of) an Indian tribe	<ul style="list-style-type: none"> • \$1.50-per-ton production credit (adjusted for inflation from 2005) for 2006 and 2007 • \$2-per-ton credit (adjust for inflation from 2005) for 2008 through 2012 	12/31/12

Summary of Energy Credits Related to Fossil Fuels (cont'd)			
Eligible Activity	Description	Credit Amount	Expiration
Refined coal credit (used to produce steam) (sec. 45)	Production credit for refined coal, defined as a synthetic fuel produced from coal (including lignite) or high-carbon fly ash that when burned emits 20 percent less nitrogen oxide and 40 percent less sulfur dioxide or mercury compared to feedstock coal available in 2003	<ul style="list-style-type: none"> • \$4.375-per-ton production credit (adjusted for inflation from 1992) • Credit is available during the 10-year period from the date the facility was placed in service 	12/31/2009
Refined coal credit (used as steel industry fuel) (sec. 45)	Production credit for steel industry fuel, defined as a fuel produced through a process of liquefying coal waste sludge, distributing the liquefied product on coal, and using the resulting mixture as a feedstock for the manufacture of coke	\$2 (adjusted for inflation from 1992) per barrel-of-oil equivalent	<ul style="list-style-type: none"> • Generally, one year from facility placed-in-service date or 12/31/2009 • Facilities must be placed in service before 1/1/2010
Coke credit (sec. 45K)	<ul style="list-style-type: none"> • Credit for the production of coke or coke gas (excluding petroleum-based coke or coke gas) • Amount of credit-eligible coke per facility is limited to 4,000 barrels per day 	\$3 (adjusted for inflation from 2004) per barrel-of-oil equivalent	<ul style="list-style-type: none"> • Facilities must be placed in service by 12/31/2009 • Credit available for four years from placed-in-service date

Summary of Energy Credits Related to Fossil Fuels (cont'd)

Eligible Activity	Description	Credit Amount	Expiration
Advanced coal project credit (sec. 48A)	<ul style="list-style-type: none"> • Investment credit for projects that use integrated gasification combined cycle (IGCC) or other advanced coal-based electricity generation technologies • Credits are allocated by the Secretary • First round allocations are capped at \$800 million for IGCC projects and \$500 million for other projects • Second round allocations are capped at \$1.25 billion • Second round projects must generally sequester 65 percent of total CO₂ emissions 	<ul style="list-style-type: none"> • 20 percent for first round IGCC projects • 15 percent for other first round projects • 30 percent for second round projects 	None (other than the credit allocation limitation)
Gasification credit (sec. 48B)	<ul style="list-style-type: none"> • Investment credit for qualified projects that use gasification technology • Qualified projects convert coal, petroleum residue, biomass, or other materials recovered for their energy content into a synthesis gas for direct use or subsequent chemical or physical conversion • Credits are allocated by the Secretary • First round allocations are capped at \$350 million • Second round allocations are capped at \$250 million • First round projects are generally limited to industrial applications; second round projects include projects designed to produce motor fuels • Second round projects must generally sequester 65 percent of total CO₂ emissions 	<ul style="list-style-type: none"> • 20 percent for first round • 30 percent for second round 	None (other than the credit allocation limitation)

I. Summary of Other Energy Provisions			
Eligible Activity	Description	Credit Amount for 2008	Expiration
Carbon dioxide sequestration credit (sec. 45Q)	<ul style="list-style-type: none"> • Credit for the sequestration of industrial source carbon dioxide produced at qualified U.S. facilities • Qualified facilities must capture at least 500,000 metric tons of CO₂ per year. 	<ul style="list-style-type: none"> • \$10 for CO₂ used as a tertiary injectant and then permanently sequestered • \$20 for CO₂ permanently sequestered without being first used as a tertiary injectant 	End of the year in which the Secretary determines that 75 million tons of CO ₂ have been captured and sequestered
Energy research credit (sec. 41)	<ul style="list-style-type: none"> • Credit for payments made to energy research consortia for qualified energy research • Includes research related to fossil fuels as well as to renewable energy technologies 	20 percent of qualified expenses	12/31/2009
Advanced energy property credit (sec. 48C)	<ul style="list-style-type: none"> • Investment credit for property used in a qualified advanced energy manufacturing project • Credits are allocated by the Secretary • Up to \$2.3 billion of credits may be allocated 	30 percent of qualified investment expenses	None other than the credit allocation limitation
Advanced nuclear power production credit (sec. 45J)	<ul style="list-style-type: none"> • Credit for production of nuclear power from new facilities that use modern designs and have received an allocation from the Secretary • Secretary may allocate up 6,000 megawatts of credit-eligible capacity 	1.8 cents per kilowatt-hour for the eight-year period starting when the facility was placed in service	Qualified facilities must have been placed in service by 12/31/2020

Summary of Other Energy Provisions (cont'd)			
Eligible Activity	Description	Credit Amount for 2008	Expiration
Passive loss rules for working interests in oil and gas property (sec. 469)	<ul style="list-style-type: none"> • Passive activity loss rules not applicable to working interest in any oil or gas property that taxpayer holds directly or indirectly through an entity that does not limit the taxpayer's liability • Losses and credits from such interests, in general, may offset income from other activities of taxpayer 	N/A	None
Nuclear decommissioning costs (sec. 468A)	<ul style="list-style-type: none"> • Current tax deduction allowed for contributions to qualified nuclear decommissioning fund at election of taxpayer • Income of fund taxed at reduced rate of 20 percent 	N/A	None
Reduced tax for diesel-water fuel emulsion (secs. 4081(a)(2)(D), 4081(c), and 6427(m))	<ul style="list-style-type: none"> • Diesel fuel tax rate of 24.3 cents per gallon is reduced to 19.7 cents per gallon for diesel-water fuel emulsion to reflect the reduced Btu content per gallon resulting from the water. • Refund of the difference between the two rates is available to the extent tax-paid diesel is used to produce a qualifying emulsion diesel fuel. 	N/A	None

Summary of Other Energy Provisions (cont'd)			
Eligible Activity	Description	Credit Amount for 2008	Expiration
Certain publicly treated partnerships treated as corporations (secs. 7704 and 851)	<ul style="list-style-type: none"> • General rule that a publicly traded partnership is taxed as a corporation is not applicable if 90 percent of gross income is interest, dividends, real property rents, or certain other types of qualifying income • Other types of qualifying income includes income and gains from certain activities with respect to natural resources 	N/A	None
Energy conservation subsidies provided by public utilities (sec. 136)	<ul style="list-style-type: none"> • Energy conservation subsidies provided by public utilities are excluded from gross income 	N/A	None
Five-Year carryback of net operating losses for certain electric utility companies (sec. 172(b)(1)(I))	<ul style="list-style-type: none"> • A portion of net operating losses arising in 2003 - 2005 for certain electric utility companies may be carried back for 5 years 	N/A	December 31, 2008
Deferral of Gains from the Sale of Electric Transmission Property (sec. 451(i))	<ul style="list-style-type: none"> • A taxpayer may elect to recognize gain ratably over an eight year period for gains on disposition of certain electric transmission property 	N/A	December 31, 2009

J. Summary of Energy-Related Bond Provisions

Type of Bond	Description
<p>Clean Renewable Energy Bonds (“CREBs”) (sec. 54)</p>	<ul style="list-style-type: none"> • Tax credit bond. • CREBs are defined as any bond if the proceeds from the issuance of such bonds are used to finance facilities that qualify for the tax credit under section 45 (other than Indian coal production facilities). • Credit rate is rate that permits issuance of CREBs without discount and interest cost to the qualified issuer. • Qualified issuers include electrical cooperatives, clean renewable energy bond lenders, and State and local governments (including Indian tribes). • Volume limited and allocated by the Secretary of the Treasury.
<p>New CREBs (sec. 54C)</p>	<ul style="list-style-type: none"> • Tax credit bond. • New CREBs may be issued to finance “qualified renewable energy facilities.” Qualified renewable energy facilities are facilities that: (1) qualify for the tax credit under section 45 (other than Indian coal and refined coal production facilities). • Credit rate is 70 percent of the rate that permits issuance of bonds without discount and interest cost to the issuer. • Qualified issuers include electrical cooperatives, clean renewable energy bond lenders, public power providers, State and local governments (including Indian tribes), and not-for-profit electric utilities which have a loan or loan guarantee under the Rural Electrification Act. • Volume limited and allocated by the Secretary of the Treasury.
<p>Qualified Energy Conservation Tax Credit Bonds (“QECs”) (sec. 54D)</p>	<ul style="list-style-type: none"> • Tax credit bond. • Bond issuance must be used for “qualified conservation purposes” (described in detail in section II.B.6 of this document). • Credit rate is 70 percent of the rate that permits issuance of bonds without discount and interest cost to the issuer. • Volume limited and allocated by the Secretary of the Treasury.
<p>Safe Harbor from arbitrage rules for prepaid natural gas (sec. 148)</p>	<ul style="list-style-type: none"> • Allows tax-exempt bonds to be used to finance prepaid natural gas contracts without application of the otherwise applicable arbitrage rules.

Summary of Energy-Related Bond Provisions (cont'd)

Type of Bond	Description
Tax-exempt bonds for certain public energy - related projects (sec. 103)	<ul style="list-style-type: none"> • Tax-exempt bond • May be used for financing government-owned and operated electrical and gas powered generation, transmission and distribution facilities • Not subject to any volume caps
Tax-exempt bonds for certain public private energy - related projects (secs. 141, and 142)	<ul style="list-style-type: none"> • Tax-exempt bond • May be used for financing certain exempt facilities including privately owned and/or operated utility facilities (sewage, water, solid waste disposal, and local district heating and cooling facilities, certain private electric and gas facilities, and hydroelectric dam enhancements); qualified green building and sustainable design projects • Generally subject to private activity volume cap

II. DESCRIPTION OF PRESENT LAW

A. Tax Provisions Relating to Renewable Energy

1. Credit for alternative fuel vehicle refueling property (sec. 30C)

Present Law

Taxpayers may claim a 30-percent credit for the cost of installing qualified clean-fuel vehicle refueling property to be used in a trade or business of the taxpayer or installed at the principal residence of the taxpayer.² The credit may not exceed \$30,000 per taxable year per location, in the case of qualified refueling property used in a trade or business and \$1,000 per taxable year per location, in the case of qualified refueling property installed on property which is used as a principal residence.

For property placed in service in 2009 or 2010, the maximum credit available for business property is increased to \$200,000 for qualified hydrogen refueling property and to \$50,000 for other qualified refueling property. For nonbusiness property, the maximum credit is increased to \$2,000 for refueling property other than hydrogen refueling property. In addition, during these years, the credit rate is increased from 30 percent to 50 percent for refueling property other than hydrogen refueling property.

Qualified refueling property is property (not including a building or its structural components) for the storage or dispensing of a clean-burning fuel or electricity into the fuel tank or battery of a motor vehicle propelled by such fuel or electricity, but only if the storage or dispensing of the fuel or electricity is at the point of delivery into the fuel tank or battery of the motor vehicle. The use of such property must begin with the taxpayer.

Clean-burning fuels are any fuel at least 85 percent of the volume of which consists of ethanol, natural gas, compressed natural gas, liquefied natural gas, liquefied petroleum gas, or hydrogen. In addition, any mixture of biodiesel and diesel fuel, determined without regard to any use of kerosene and containing at least 20 percent biodiesel, qualifies as a clean fuel.

Credits for qualified refueling property used in a trade or business are part of the general business credit and may be carried back for one year and forward for 20 years. Credits for residential qualified refueling property cannot exceed for any taxable year the difference between the taxpayer's regular tax (reduced by certain other credits) and the taxpayer's tentative minimum tax. Generally, in the case of qualified refueling property sold to a tax-exempt entity, the taxpayer selling the property may claim the credit.

A taxpayer's basis in qualified refueling property is reduced by the amount of the credit. In addition, no credit is available for property used outside the United States or for which an election to expense has been made under section 179.

² Sec. 30C.

The credit is available for property placed in service after December 31, 2005, and (except in the case of hydrogen refueling property) before January 1, 2011. In the case of hydrogen refueling property, the property must be placed in service before January 1, 2015.

2. Incentives for alcohol, cellulosic biofuel, biodiesel, renewable diesel, and certain alternative fuels (secs. 40, 40A, 6426, and 6427(e))

Overview

The Code provides per-gallon incentives relating to the following qualified fuels: alcohol (including ethanol), biodiesel (including agri-biodiesel), renewable diesel, and certain alternative fuels.³ The incentives may be taken as an income tax credit, excise tax credit or payment. The provisions are coordinated so that a gallon of qualified fuel is only taken into account once. If the qualified fuel is part of a qualified fuel mixture, the incentives apply only to the amount of qualified fuel in the mixture. The Code also provides an income tax credit for qualified cellulosic biofuel production.

For alcohol, other than ethanol, the amount of the credit generally is 60 cents per gallon.⁴ For ethanol, the credit is generally 45 cents per gallon, with an extra 10 cents per gallon available for small ethanol producers. The alcohol incentives expire after December 31, 2010. The amount of the credit is \$1.00 per gallon for biodiesel, agri-biodiesel and renewable diesel. An extra 10 cents per gallon is available for small producers of agri-biodiesel. The biodiesel, agri-biodiesel and renewable diesel incentives expire after December 31, 2009. The credit amount for alternative fuels is 50 cents per gallon. The incentives for alternative fuels expire after December 31, 2009 (after September 30, 2014, in the case of liquefied hydrogen). For cellulosic biofuel, the provision is applicable to qualified cellulosic biofuel production through December 31, 2012.

Fuel that is produced outside the United States for use as a fuel outside the United States is ineligible for the per-gallon tax incentives relating to alcohol, biodiesel, renewable diesel, and alternative fuel. For example, fuel in the following situations is ineligible for incentives: (1) biodiesel, which is not in a mixture, that is both produced and used outside the United States, (2) foreign-produced biodiesel that is used to make a qualified mixture outside of the United States for foreign use, and (3) foreign-produced biodiesel that is used to make a qualified mixture in the United States that is then exported for foreign use. For cellulosic biofuel, the fuel must be both produced in the United States and used as fuel in the United States.

³ See secs. 40, 40A, 6426, and 6427(e). In addition, the payments authorized under section 6427(e) of the Code for alcohol fuel mixtures, biodiesel fuel mixtures, renewable diesel fuel mixtures, alternative fuel mixtures and alternative fuel, may be taken as a refundable income tax credit pursuant to section 34 and section 6401(b)(1) of the Code. The section 34 income tax credit is not available for any amount for which a timely claim has been filed under section 6427.

⁴ For the section 40 income tax credit, there is a smaller credit amount for alcohol with a proof of at least 150 but less than 190.

Alcohol made from petroleum, natural gas, or coal does not qualify for the incentives mentioned above. For fuel alcohol that is made from natural gas, the Code provides a reduced rate of tax. This incentive expires September 30, 2011. The reduced rate of tax for alcohol made from coal expired January 1, 2009.

Alcohol and cellulosic biofuel

Sections 40, 6426 and 6427(e) provide per-gallon tax incentives for the sale, use and production of alcohol fuel and alcohol fuel mixtures. The incentives for alcohol generally do not apply after December 31, 2010. For cellulosic biofuel (discussed infra), the incentive is unavailable after December 31, 2012.

“Alcohol” includes methanol and ethanol, and the alcohol gallon equivalent of ethyl tertiary butyl ether, or other ethers produced from such alcohol. It does not include alcohol produced from petroleum, natural gas, or coal, or any alcohol with a proof of less than 150 (190 proof for purposes of the credit taken under 6426 or payment under section 6427). Denaturants (additives that make the alcohol unfit for human consumption) are disregarded for purposes of determining proof. However, denaturants are taken into account in determining the volume of alcohol eligible for the per-gallon incentive. In calculating alcohol volume, denaturants cannot exceed two percent of volume.⁵

The section 40 alcohol fuels credit is an income tax credit comprised of four components: (1) the alcohol mixture credit, (2) the alcohol credit, (3) the small ethanol producer credit, and (4) the cellulosic biofuel producer credit. Sections 6426 and 6427(e) pertain to alcohol fuel mixtures only.

Alcohol mixture credits and payments

The alcohol fuel mixture credit may be taken as part of the section 40 income tax credit, the section 6426 excise tax credit or as a payment under section 6427. For section 40, an alcohol fuel mixture is a mixture of alcohol and gasoline or alcohol and a special fuel. Since the excise tax credit is taken against the liability for taxable fuels (gasoline, kerosene, or diesel), for purposes of the excise tax payments and credits, an alcohol fuel mixture is a mixture of alcohol and a taxable fuel.

⁵ Before January 1, 2009, the Code permitted the volume of alcohol eligible for the credit to include up to five percent denaturants. Gasoline is often used as denaturant. Section 15332 of the Food, Conservation and Energy Act of 2008 (Pub. L. No 110-234) reduced allowable denaturants from five percent to two percent. Under Alcohol, Tobacco Tax and Trade Bureau regulations (27 C.F.R. sec. 19.1005) for alcohol to be eligible for withdrawal as fuel alcohol, denaturants included in the volume of the fuel alcohol must exceed 1.96 percent of the volume of the fuel alcohol. Because of comments from the public about the ability to accurately measure the volume of denaturants in alcohol, Notice 2009-6, 2009-3 I.R.B. (2009), provides a safe harbor and transitional rule to implement the two-percent limitation. The IRS will treat denaturants as not clearly exceeding the two-percent limitation unless there is clear evidence establishing that the denaturants exceed 2.5 percent of volume (including denaturants). The safe harbor is available only if no more than two percent of the alcohol’s volume is disregarded under the rule providing that proof is determined without regard to added denaturants.

The fuel must be either sold for use as a fuel to another person or used as fuel in the mixture producer's trade or business. The addition of denaturants is not the production of a mixture. The credit is allowed only for the gallons of alcohol used to produce the mixture. For alcohol that is ethanol, the amount of the incentive is 45 cents per gallon. For other alcohol, the incentive is 60 cents per gallon.

The alcohol mixture credit is most often taken as an excise tax credit or payment. Persons who blend alcohol with gasoline, diesel fuel, or kerosene to produce an alcohol fuel mixture must pay tax on the volume of alcohol in the mixture when the mixture is sold or removed. The alcohol fuel mixture credit must first be taken to reduce excise tax liability for gasoline, diesel fuel or kerosene. Any excess credit may be taken as a payment or income tax credit.

Alcohol credit (straight or "neat" alcohol)

The second component of the section 40 income tax credit is the alcohol credit. The credit is available for alcohol (not in a mixture) that is either (1) used as a fuel in the taxpayer's trade or business, or (2) sold at retail and placed in the fuel tank of the retail buyer. The credit cannot be claimed for alcohol bought at retail, even if the buyer uses it as a fuel in a trade or business. This credit is not available as an excise tax credit or payment.

Small ethanol producer credit

The third component of the section 40 income tax credit is the small ethanol producer credit. It is in addition to the credits described above and is an extra 10 cents per gallon available for up to 15 million gallons of qualified ethanol fuel production for any tax year. The 15 million gallon limitation is waived for ethanol that is cellulosic ethanol. The credit is available to eligible small ethanol producers, defined as producers who have an annual productive capacity of not more than 60 million gallons of any type of alcohol. Qualified ethanol fuel production is ethanol produced and sold by such producer to another person (a) for use by such other person in the production of a qualified alcohol fuel mixture in such person's trade or business (other than casual off-farm production), (b) for use by such other person as a fuel in a trade or business, or (c) who sells such ethanol at retail to another person and places such ethanol in the fuel tank of such other person. Qualified ethanol fuel production also includes use or sale by the producer for any purpose described in (a), (b), or (c). A cooperative may pass through the small ethanol producer credit to its patrons.

The small ethanol producer credit is not available as an excise tax credit or payment.

Cellulosic biofuel producer credit

Section 15332 of the Food, Conservation, and Energy Act of 2008 (Pub. L. No 110-234) added a new component to section 40 of the Code, the "cellulosic biofuel producer credit." This credit is a nonrefundable income tax credit for each gallon of qualified cellulosic fuel production of the producer for the taxable year. The amount of the credit per gallon is \$1.01, except in the case of cellulosic biofuel that is alcohol. In the case of cellulosic biofuel that is alcohol, the \$1.01 credit amount is reduced by (1) the credit amount applicable for such alcohol under the alcohol mixture credit as in effect at the time cellulosic biofuel is produced and (2) in the case of

cellulosic biofuel that is also ethanol, the credit amount for small ethanol producers as in effect at the time the cellulosic biofuel fuel is produced. The reduction applies regardless of whether the producer claims the alcohol mixture credit or small ethanol producer credit with respect to the cellulosic alcohol. When the alcohol mixture credit and small ethanol producer credit expire after December 31, 2010, cellulosic biofuel will receive the \$1.01 without reduction.

“Qualified cellulosic biofuel production” is any cellulosic biofuel which is produced by the taxpayer and which is (1) sold by the taxpayer to another person (a) for use by such other person in the production of a qualified biofuel fuel mixture in such person’s trade or business (other than casual off-farm production), (b) for use by such other person as a fuel in a trade or business, or, (c) who sells such biofuel at retail to another person and places such biofuel in the fuel tank of such other person; or (2) used by the producer for any purpose described in (a), (b), or (c).

“Cellulosic biofuel” means any liquid fuel that (1) is produced in the United States and used as fuel in the United States,⁶ (2) is derived from any lignocellulosic or hemicellulosic matter that is available on a renewable or recurring basis and (3) meets the registration requirements for fuels and fuel additives established by the Environmental Protection Agency (“EPA”) under section 211 of the Clean Air Act. Thus, to qualify for the credit the fuel must be approved by the Environmental Protection Agency. Cellulosic biofuel does not include any alcohol with a proof of less than 150.

A “qualified cellulosic biofuel mixture” is a mixture of cellulosic biofuel and a special fuel or of cellulosic biofuel and gasoline, which is sold by the person producing such mixture to any person for use as a fuel, or is used as a fuel by the person producing such mixture. The term “special fuel” includes any liquid fuel (other than gasoline) which is suitable for use in an internal combustion engine.

The cellulosic biofuel producer credit terminates on December 31, 2012. The cellulosic biofuel producer credit cannot be claimed unless the taxpayer is registered with the IRS as a producer of cellulosic biofuel.

Cellulosic biofuel eligible for the section 40 credit cannot qualify as biodiesel, renewable diesel, or alternative fuel for purposes of the income tax credit, excise tax credit, or payment provisions relating to those fuels.⁷

Alcohol produced from coal and natural gas

As noted above, the alcohol incentives discussed above do not apply to alcohol produced from petroleum, natural gas, or coal. There is a reduced rate of tax for fuel alcohol produced from natural gas. The reduced rate of tax for fuel alcohol produced from coal has expired.

⁶ For this purpose, “United States” includes any possession of the United States.

⁷ See secs. 40A(d)(1), 40A(f)(3), 6426(h).

Reduced rate of tax for alcohol fuels produced from natural gas

A reduced rate of fuel tax is provided for “partially exempt methanol or ethanol fuel.” The term “partially exempt methanol or ethanol fuel” means any liquid at least 85 percent of which consists of methanol, ethanol or other alcohol (including methanol and ethanol) produced from natural gas. Partially exempt methanol (or other alcohol) is taxed at 9.15 cents per gallon. Partially exempt ethanol is taxed at 11.3 cents per gallon. After September 30, 2011, these rates drop to 2.15 cents per gallon and 4.3 cents per gallon, respectively.

Reduced rate of tax for alcohol fuels produced from coal

A reduced rate of fuel tax was also provided for “qualified methanol and ethanol fuel.” The term “qualified methanol or ethanol fuel” means any liquid at least 85 percent of which consists of methanol, ethanol, or other alcohol produced from coal (including peat). Qualified ethanol was taxed at 13.25 cents per gallon. Qualified methanol was taxed at 12.35 cents per gallon. The incentive expired January 1, 2009.

Biodiesel

The Code provides an income tax credit for biodiesel fuels (the “biodiesel fuels credit”).⁸ The biodiesel fuels credit is the sum of three credits: (1) the biodiesel mixture credit, (2) the biodiesel credit, and (3) the small agri-biodiesel producer credit. The biodiesel fuels credit is treated as a general business credit. The amount of the biodiesel fuels credit is includable in gross income. The biodiesel fuels credit is coordinated to take into account benefits from the biodiesel excise tax credit and payment provisions discussed below. The credit does not apply to fuel sold or used after December 31, 2009.

Biodiesel is monoalkyl esters of long chain fatty acids derived from plant or animal matter that meet (1) the registration requirements established by the EPA under section 211 of the Clean Air Act (42 U.S.C. sec. 7545) and (2) the requirements of the American Society of Testing and Materials (“ASTM”) D6751. Agri-biodiesel is biodiesel derived solely from virgin oils including oils from corn, soybeans, sunflower seeds, cottonseeds, canola, crambe, rapeseeds, safflowers, flaxseeds, rice bran, mustard seeds, camelina, or animal fats.

Biodiesel may be taken into account for purposes of the credit only if the taxpayer obtains a certification (in such form and manner as prescribed by the Secretary) from the producer or importer of the biodiesel that identifies the product produced and the percentage of biodiesel and agri-biodiesel in the product.

Biodiesel mixture credit

The biodiesel mixture credit is \$1.00 for each gallon of biodiesel (including agri-biodiesel) used by the taxpayer in the production of a qualified biodiesel mixture. A qualified biodiesel mixture is a mixture of biodiesel and diesel fuel that is (1) sold by the taxpayer

⁸ Sec. 40A.

producing such mixture to any person for use as a fuel, or (2) used as a fuel by the taxpayer producing such mixture. The sale or use must be in the trade or business of the taxpayer and is to be taken into account for the taxable year in which such sale or use occurs. No credit is allowed with respect to any casual off-farm production of a qualified biodiesel mixture.

Per IRS guidance a mixture need only contain 1/10th of one percent of diesel fuel to be a qualified mixture. Thus, a qualified biodiesel mixture can contain 99.9 percent biodiesel and 0.1 percent diesel fuel.

Biodiesel credit (straight biodiesel)

The biodiesel credit is \$1.00 for each gallon of biodiesel that is not in a mixture with diesel fuel (100 percent biodiesel or B-100) and which during the taxable year is (1) used by the taxpayer as a fuel in a trade or business or (2) sold by the taxpayer at retail to a person and placed in the fuel tank of such person's vehicle.

Small agri-biodiesel producer credit

The Code provides a small agri-biodiesel producer income tax credit, in addition to the biodiesel and biodiesel fuel mixture credits. The credit is a 10-cents-per-gallon credit for up to 15 million gallons of agri-biodiesel produced by small producers, defined generally as persons whose agri-biodiesel production capacity does not exceed 60 million gallons per year. The agri-biodiesel must (1) be sold by such producer to another person (a) for use by such other person in the production of a qualified biodiesel mixture in such person's trade or business (other than casual off-farm production), (b) for use by such other person as a fuel in a trade or business, or, (c) who sells such agri-biodiesel at retail to another person and places such agri-biodiesel in the fuel tank of such other person; or (2) used by the producer for any purpose described in (a), (b), or (c).

Biodiesel mixture excise tax credit

The Code also provides an excise tax credit for biodiesel mixtures.⁹ The credit is \$1.00 for each gallon of biodiesel used by the taxpayer in producing a biodiesel mixture for sale or use in a trade or business of the taxpayer. A biodiesel mixture is a mixture of biodiesel and diesel fuel that (1) is sold by the taxpayer producing such mixture to any person for use as a fuel or (2) is used as a fuel by the taxpayer producing such mixture. No credit is allowed unless the taxpayer obtains a certification (in such form and manner as prescribed by the Secretary) from the producer of the biodiesel that identifies the product produced and the percentage of biodiesel and agri-biodiesel in the product.¹⁰

⁹ Sec. 6426(c).

¹⁰ Sec. 6426(c)(4).

The credit is not available for any sale or use for any period after December 31, 2009. This excise tax credit is coordinated with the income tax credit for biodiesel such that credit for the same biodiesel cannot be claimed for both income and excise tax purposes.

Payments with respect to biodiesel fuel mixtures

If any person produces a biodiesel fuel mixture in such person's trade or business, the Secretary is to pay such person an amount equal to the biodiesel mixture credit.¹¹ The biodiesel fuel mixture credit must first be taken against tax liability for taxable fuels. To the extent the biodiesel fuel mixture credit exceeds such tax liability, the excess may be received as a payment. Thus, if the person has no section 4081 liability, the credit is refundable. The Secretary is not required to make payments with respect to biodiesel fuel mixtures sold or used after December 31, 2009.

Renewable diesel

"Renewable diesel" is liquid fuel that (1) is derived from biomass (as defined in section 45K(c)(3)), (2) meets the registration requirements for fuels and fuel additives established by the EPA under section 211 of the Clean Air Act, and (3) meets the requirements of the ASTM D975 or D396, or equivalent standard established by the Secretary. ASTM D975 provides standards for diesel fuel suitable for use in diesel engines. ASTM D396 provides standards for fuel oil intended for use in fuel-oil burning equipment, such as furnaces. Renewable diesel also includes fuel derived from biomass that meets the requirements of a Department of Defense specification for military jet fuel or an ASTM for aviation turbine fuel.

For purposes of the Code, renewable diesel is generally treated the same as biodiesel. In the case of renewable diesel that is aviation fuel, kerosene is treated as though it were diesel fuel for purposes of a qualified renewable diesel mixture. Like biodiesel, the incentive may be taken as an income tax credit, an excise tax credit, or as a payment from the Secretary.¹² The incentive for renewable diesel is \$1.00 per gallon. There is no small producer credit for renewable diesel. The incentives for renewable diesel expire after December 31, 2009.

Alternative fuel excise tax credits and payments

The Code provides two per-gallon excise tax credits with respect to alternative fuel, the alternative fuel credit, and the alternative fuel mixture credit. For this purpose, the term "alternative fuel" means liquefied petroleum gas, P Series fuels (as defined by the Secretary of Energy under 42 U.S.C. sec. 13211(2)), compressed or liquefied natural gas, liquefied hydrogen, liquid fuel derived from coal through the Fischer-Tropsch process ("coal-to-liquids"), compressed or liquified gas derived from biomass, or liquid fuel derived from biomass. Such term does not include ethanol, methanol, or biodiesel.

¹¹ Sec. 6427(e).

¹² Secs. 40A(f), 6426(c), and 6427(e).

For coal-to-liquids produced after September 30, 2009 through December 30, 2009, the fuel must be certified as having been derived from coal produced at a gasification facility that separates and sequesters 50 percent of such facility's total carbon dioxide emissions. The sequestration percentage increases to 75 percent for fuel produced after December 30, 2009.

The alternative fuel credit is allowed against section 4041 liability, and the alternative fuel mixture credit is allowed against section 4081 liability. Neither credit is allowed unless the taxpayer is registered with the Secretary. The alternative fuel credit is 50 cents per gallon of alternative fuel or gasoline gallon equivalents¹³ of nonliquid alternative fuel sold by the taxpayer for use as a motor fuel in a motor vehicle or motorboat, sold for use in aviation or so used by the taxpayer.

The alternative fuel mixture credit is 50 cents per gallon of alternative fuel used in producing an alternative fuel mixture for sale or use in a trade or business of the taxpayer. An "alternative fuel mixture" is a mixture of alternative fuel and taxable fuel that contains at least 1/10 of one percent taxable fuel.¹⁴ The mixture must be sold by the taxpayer producing such mixture to any person for use as a fuel, or used by the taxpayer producing the mixture as a fuel. The credits generally expire after December 31, 2009.

A person may file a claim for payment equal to the amount of the alternative fuel credit and alternative fuel mixture credits. These payment provisions generally also expire after December 31, 2009. With respect to liquefied hydrogen, the credit and payment provisions expire after September 30, 2014. The alternative fuel credit and alternative fuel mixture credit must first be applied to excise tax liability for special and alternative fuels, and any excess credit may be taken as a payment.

¹³ "Gasoline gallon equivalent" means, with respect to any nonliquid alternative fuel (for example, compressed natural gas), the amount of such fuel having a Btu (British thermal unit) content of 124,800 (higher heating value).

¹⁴ See Internal Revenue Service, Notice 2006-92, *Alternative Fuel, Alternative Fuel Mixtures; Blood Collector Organizations*, 2006-43 I.R.B. 774 (October 23, 2006). Recent alternative fuel mixture claims for the burning of black liquor (a byproduct of the manufacturing of pulp and paper) and diesel fuel in recovery boilers have highlighted the fact that the fuel mixture credits are not limited to transportation uses, and that there is no upper limit on the dollar amount that may be claimed. See, International Paper, *News Release: International Paper Provides Update on Alternative Fuel Credits* (March 24, 2009); Steve Mufson, Washington Post, *Papermakers Dig Deep in Highway Bill to Hit Gold* (March 28, 2009 at p. D.1); Rebecca Penty, New Brunswick Business Journal, *Canada at a Disadvantage: Forestry Industry Contends Credits are Subsidies that Allow U.S. Firms to Better Compete* (April 3, 2009 at p. B.1); and Jad Mouawad and Clifford Krauss, The New York Times, *Lawmakers May Limit Paper Mills' Windfall* (April 18, 2009).

3. Renewable electricity production credit (sec. 45)

In general

An income tax credit is allowed for the production of electricity from qualified energy resources at qualified facilities (the “renewable electricity production credit”).¹⁵ Qualified energy resources comprise wind, closed-loop biomass, open-loop biomass, geothermal energy, solar energy, small irrigation power, municipal solid waste, qualified hydropower production, and marine and hydrokinetic renewable energy. Qualified facilities are, generally, facilities that generate electricity using qualified energy resources. To be eligible for the credit, electricity produced from qualified energy resources at qualified facilities must be sold by the taxpayer to an unrelated person.

Credit amounts and credit period

In general

The base amount of the electricity production credit is 1.5 cents (indexed annually for inflation) per kilowatt-hour of electricity produced. The amount of the credit was 2.1 cents per kilowatt-hour for 2008. A taxpayer may generally claim a credit during the 10-year period commencing with the date the qualified facility is placed in service. The credit is reduced for grants, tax-exempt bonds, subsidized energy financing, and other credits.

Credit phaseout

The amount of credit a taxpayer may claim is phased out as the market price of electricity exceeds certain threshold levels. The electricity production credit is reduced over a 3-cent phaseout range to the extent the annual average contract price per kilowatt-hour of electricity sold in the prior year from the same qualified energy resource exceeds 8 cents (adjusted for inflation; 11.8 cents for 2008).

Reduced credit periods and credit amounts

Generally, in the case of open-loop biomass facilities (including agricultural livestock waste nutrient facilities), geothermal energy facilities, solar energy facilities, small irrigation power facilities, landfill gas facilities, and trash combustion facilities placed in service before August 8, 2005, the 10-year credit period is reduced to five years, commencing on the date the facility was originally placed in service. However, for qualified open-loop biomass facilities (other than a facility described in section 45(d)(3)(A)(i) that uses agricultural livestock waste nutrients) placed in service before October 22, 2004, the five-year period commences on January 1, 2005. In the case of a closed-loop biomass facility modified to co-fire with coal, to

¹⁵ Sec. 45. In addition to the renewable electricity production credit, section 45 also provides income tax credits for the production of Indian coal and refined coal at qualified facilities. A grant program is also available for 2009 and 2010 allowing taxpayers to apply for a thirty-percent grant in lieu of the renewable electricity production credit.

co-fire with other biomass, or to co-fire with coal and other biomass, the credit period begins no earlier than October 22, 2004.

In the case of open-loop biomass facilities (including agricultural livestock waste nutrient facilities), small irrigation power facilities, landfill gas facilities, trash combustion facilities, qualified hydropower facilities, and marine and hydrokinetic renewable energy facilities, the otherwise allowable credit amount is 0.75 cent per kilowatt-hour, indexed for inflation measured after 1992 (1 cent per kilowatt-hour for 2008).

Other limitations on credit claimants and credit amounts

In general, to claim the credit, a taxpayer must own the qualified facility and sell the electricity produced by the facility to an unrelated party. A lessee or operator may claim the credit in lieu of the owner of the qualifying facility in the case of qualifying open-loop biomass facilities and in the case of closed-loop biomass facilities modified to co-fire with coal, to co-fire with other biomass, or to co-fire with coal and other biomass. In the case of a poultry waste facility, the taxpayer may claim the credit as a lessee or operator of a facility owned by a governmental unit.

For all qualifying facilities, other than closed-loop biomass facilities modified to co-fire with coal, to co-fire with other biomass, or to co-fire with coal and other biomass, the amount of credit a taxpayer may claim is reduced by reason of grants, tax-exempt bonds, subsidized energy financing, and other credits, but the reduction cannot exceed 50 percent of the otherwise allowable credit. In the case of closed-loop biomass facilities modified to co-fire with coal, to co-fire with other biomass, or to co-fire with coal and other biomass, there is no reduction in credit by reason of grants, tax-exempt bonds, subsidized energy financing, and other credits.

The credit for electricity produced from renewable resources is a component of the general business credit.¹⁶ Generally, the general business credit for any taxable year may not exceed the amount by which the taxpayer's net income tax exceeds the greater of the tentative minimum tax or 25 percent of so much of the net regular tax liability as exceeds \$25,000. However, this limitation does not apply to section 45 credits for electricity or refined coal produced from a facility (placed in service after October 22, 2004) during the first four years of production beginning on the date the facility is placed in service.¹⁷ Excess credits may be carried back one year and forward up to 20 years.

¹⁶ Sec. 38(b)(8).

¹⁷ Sec. 38(c)(4)(B)(ii).

Qualified facilities

Wind energy facility

A wind energy facility is a facility that uses wind to produce electricity. To be a qualified facility, a wind energy facility must be placed in service after December 31, 1993, and before January 1, 2013.

Closed-loop biomass facility

A closed-loop biomass facility is a facility that uses any organic material from a plant that is planted exclusively for the purpose of being used at a qualifying facility to produce electricity. In addition, a facility can be a closed-loop biomass facility if it is a facility that is modified to use closed-loop biomass to co-fire with coal, with other biomass, or with both coal and other biomass, but only if the modification is approved under the Biomass Power for Rural Development Programs or is part of a pilot project of the Commodity Credit Corporation.

To be a qualified facility, a closed-loop biomass facility must be placed in service after December 31, 1992, and before January 1, 2014. In the case of a facility using closed-loop biomass but also co-firing the closed-loop biomass with coal, other biomass, or coal and other biomass, a qualified facility must be originally placed in service and modified to co-fire the closed-loop biomass at any time before January 1, 2014.

A qualified facility includes a new power generation unit placed in service after October 3, 2008, at an existing closed-loop biomass facility, but only to the extent of the increased amount of electricity produced at the existing facility by reason of such new unit.

Open-loop biomass (including agricultural livestock waste nutrients) facility

An open-loop biomass facility is a facility that uses open-loop biomass to produce electricity. For purposes of the credit, open-loop biomass is defined as (1) any agricultural livestock waste nutrients or (2) any solid, nonhazardous, cellulosic waste material or any lignin material that is segregated from other waste materials and which is derived from:

- forest-related resources, including mill and harvesting residues, precommercial thinnings, slash, and brush;
- solid wood waste materials, including waste pallets, crates, dunnage, manufacturing and construction wood wastes, and landscape or right-of-way tree trimmings; or
- agricultural sources, including orchard tree crops, vineyard, grain, legumes, sugar, and other crop by-products or residues.

Agricultural livestock waste nutrients are defined as agricultural livestock manure and litter, including bedding material for the disposition of manure. Wood waste materials do not qualify as open-loop biomass to the extent they are pressure treated, chemically treated, or painted. In addition, municipal solid waste, gas derived from the biodegradation of solid waste, and paper that is commonly recycled do not qualify as open-loop biomass. Open-loop biomass

does not include closed-loop biomass or any biomass burned in conjunction with fossil fuel (co-firing) beyond such fossil fuel required for start up and flame stabilization.

In the case of an open-loop biomass facility that uses agricultural livestock waste nutrients, a qualified facility is one that was originally placed in service after October 22, 2004, and before January 1, 2014, and has a nameplate capacity rating which is not less than 150 kilowatts. In the case of any other open-loop biomass facility, a qualified facility is one that was originally placed in service before January 1, 2014. A qualified facility includes a new power generation unit placed in service after October 3, 2008, at an existing open-loop biomass facility, but only to the extent of the increased amount of electricity produced at the existing facility by reason of such new unit.

Geothermal facility

A geothermal facility is a facility that uses geothermal energy to produce electricity. Geothermal energy is energy derived from a geothermal deposit that is a geothermal reservoir consisting of natural heat that is stored in rocks or in an aqueous liquid or vapor (whether or not under pressure). To be a qualified facility, a geothermal facility must be placed in service after October 22, 2004, and before January 1, 2014.

Solar facility

A solar facility is a facility that uses solar energy to produce electricity. To be a qualified facility, a solar facility must be placed in service after October 22, 2004, and before January 1, 2006.

Small irrigation facility

A small irrigation power facility is a facility that generates electric power through an irrigation system canal or ditch without any dam or impoundment of water. The installed capacity of a qualified facility must be at least 150 kilowatts but less than five megawatts. To be a qualified facility, a small irrigation facility must be originally placed in service after October 22, 2004, and before October 3, 2008. Marine and hydrokinetic renewable energy facilities, described below, subsume small irrigation power facilities after October 2, 2008.

Landfill gas facility

A landfill gas facility is a facility that uses landfill gas to produce electricity. Landfill gas is defined as methane gas derived from the biodegradation of municipal solid waste. To be a qualified facility, a landfill gas facility must be placed in service after October 22, 2004, and before January 1, 2014.

Trash combustion facility

Trash combustion facilities are facilities that use municipal solid waste (garbage) to produce steam to drive a turbine for the production of electricity. To be a qualified facility, a trash combustion facility must be placed in service after October 22, 2004, and before January 1, 2014. A qualified trash combustion facility includes a new unit, placed in service after

October 22, 2004, that increases electricity production capacity at an existing trash combustion facility. A new unit generally would include a new burner/boiler and turbine. The new unit may share certain common equipment, such as trash handling equipment, with other pre-existing units at the same facility. Electricity produced at a new unit of an existing facility qualifies for the production credit only to the extent of the increased amount of electricity produced at the entire facility.

Hydropower facility

A qualifying hydropower facility is (1) a facility that produced hydroelectric power (a hydroelectric dam) prior to August 8, 2005, at which efficiency improvements or additions to capacity have been made after such date and before January 1, 2011, that enable the taxpayer to produce incremental hydropower or (2) a facility placed in service before August 8, 2005, that did not produce hydroelectric power (a nonhydroelectric dam) on such date, and to which turbines or other electricity generating equipment have been added after such date and before January 1, 2014.

At an existing hydroelectric facility, the taxpayer may claim credit only for the production of incremental hydroelectric power. Incremental hydroelectric power for any taxable year is equal to the percentage of average annual hydroelectric power produced at the facility attributable to the efficiency improvement or additions of capacity determined by using the same water flow information used to determine an historic average annual hydroelectric power production baseline for that facility. The Federal Energy Regulatory Commission will certify the baseline power production of the facility and the percentage increase due to the efficiency and capacity improvements.

Nonhydroelectric dams converted to produce electricity must be licensed by the Federal Energy Regulatory Commission and meet all other applicable environmental, licensing, and regulatory requirements.

For a nonhydroelectric dam converted to produce electric power before January 1, 2009, there must not be any enlargement of the diversion structure, construction or enlargement of a bypass channel, or the impoundment or any withholding of additional water from the natural stream channel.

For a nonhydroelectric dam converted to produce electric power after December 31, 2008, the nonhydroelectric dam must (1) have been placed in service before October 3, 2008, (2) have been operated for flood control, navigation, or water supply purposes and (3) not have produce hydroelectric power on October 3, 2008. In addition, the hydroelectric project must be operated so that the water surface elevation at any given location and time that would have occurred in the absence of the hydroelectric project is maintained, subject to any license requirements imposed under applicable law that change the water surface elevation for the purpose of improving environmental quality of the affected waterway. The Secretary, in consultation with the Federal Energy Regulatory Commission, shall certify if a hydroelectric project licensed at a nonhydroelectric dam meets this criteria.

Marine and hydrokinetic renewable energy facility

A qualified marine and hydrokinetic renewable energy facility is any facility that produces electric power from marine and hydrokinetic renewable energy, has a nameplate capacity rating of at least 150 kilowatts, and is placed in service after October 2, 2008, and before January 1, 2014. Marine and hydrokinetic renewable energy is defined as energy derived from (1) waves, tides, and currents in oceans, estuaries, and tidal areas; (2) free flowing water in rivers, lakes, and streams; (3) free flowing water in an irrigation system, canal, or other man-made channel, including projects that utilize nonmechanical structures to accelerate the flow of water for electric power production purposes; or (4) differentials in ocean temperature (ocean thermal energy conversion). The term does not include energy derived from any source that uses a dam, diversionary structure (except for irrigation systems, canals, and other man-made channels), or impoundment for electric power production.

Taxation of cooperatives and their patrons

For Federal income tax purposes, a cooperative generally computes its income as if it were a taxable corporation, with one exception: the cooperative may exclude from its taxable income distributions of patronage dividends. Generally, a cooperative that is subject to the cooperative tax rules of subchapter T of the Code¹⁸ is permitted a deduction for patronage dividends paid only to the extent of net income that is derived from transactions with patrons who are members of the cooperative.¹⁹ The availability of such deductions from taxable income has the effect of allowing the cooperative to be treated like a conduit with respect to profits derived from transactions with patrons who are members of the cooperative.

Eligible cooperatives may elect to pass any portion of the credit through to their patrons. An eligible cooperative is defined as a cooperative organization that is owned more than 50 percent by agricultural producers or entities owned by agricultural producers. The credit may be apportioned among patrons eligible to share in patronage dividends on the basis of the quantity or value of business done with or for such patrons for the taxable year. The election must be made on a timely filed return for the taxable year and, once made, is irrevocable for such taxable year.

4. Energy credit (sec. 48)

In general

A nonrefundable, 10-percent business energy credit²⁰ is allowed for the cost of new property that is equipment that either (1) uses solar energy to generate electricity, to heat or cool a structure, or to provide solar process heat or (2) is used to produce, distribute, or use energy

¹⁸ Secs. 1381-1383.

¹⁹ Sec. 1382.

²⁰ Sec. 48.

derived from a geothermal deposit, but only, in the case of electricity generated by geothermal power, up to the electric transmission stage. Property used to generate energy for the purposes of heating a swimming pool is not eligible solar energy property.

The energy credit is a component of the general business credit.²¹ An unused general business credit generally may be carried back one year and carried forward 20 years.²² The taxpayer's basis in the property is reduced by one-half of the amount of the credit claimed. For projects whose construction time is expected to equal or exceed two years, the credit may be claimed as progress expenditures are made on the project, rather than during the year the property is placed in service. The credit is allowed against the alternative minimum tax for credits determined in taxable years beginning after October 3, 2008.

Special rules for solar energy property

The credit for solar energy property is increased to 30 percent in the case of periods prior to January 1, 2017. Additionally, equipment that uses fiber-optic distributed sunlight to illuminate the inside of a structure is solar energy property eligible for the 30-percent credit.

Fuel cells and microturbines

The energy credit applies to qualified fuel cell power plants, but only for periods prior to January 1, 2017. The credit rate is 30 percent.

A qualified fuel cell power plant is an integrated system composed of a fuel cell stack assembly and associated balance of plant components that (1) converts a fuel into electricity using electrochemical means, and (2) has an electricity-only generation efficiency of greater than 30 percent and a capacity of at least one-half kilowatt. The credit may not exceed \$1,500 for each 0.5 kilowatt of capacity.

The energy credit applies to qualifying stationary microturbine power plants for periods prior to January 1, 2017. The credit is limited to the lesser of 10 percent of the basis of the property or \$200 for each kilowatt of capacity.

A qualified stationary microturbine power plant is an integrated system comprised of a gas turbine engine, a combustor, a recuperator or regenerator, a generator or alternator, and associated balance of plant components that converts a fuel into electricity and thermal energy. Such system also includes all secondary components located between the existing infrastructure for fuel delivery and the existing infrastructure for power distribution, including equipment and controls for meeting relevant power standards, such as voltage, frequency and power factors. Such system must have an electricity-only generation efficiency of not less than 26 percent at International Standard Organization conditions and a capacity of less than 2,000 kilowatts.

²¹ Sec. 38(b)(1).

²² Sec. 39.

Geothermal heat pump property

The energy credit applies to qualified geothermal heat pump property placed in service prior to January 1, 2017. The credit rate is 10 percent. Qualified geothermal heat pump property is equipment that uses the ground or ground water as a thermal energy source to heat a structure or as a thermal energy sink to cool a structure.

Small wind property

The energy credit applies to qualified small wind energy property placed in service prior to January 1, 2017. The credit rate is 30 percent. Qualified small wind energy property is property that uses a qualified wind turbine to generate electricity. A qualifying wind turbine means a wind turbine of 100 kilowatts of rated capacity or less.

Combined heat and power property

The energy credit applies to combined heat and power (“CHP”) property placed in service prior to January 1, 2017. The credit rate is 10 percent.

CHP property is property: (1) that uses the same energy source for the simultaneous or sequential generation of electrical power, mechanical shaft power, or both, in combination with the generation of steam or other forms of useful thermal energy (including heating and cooling applications); (2) that has an electrical capacity of not more than 50 megawatts or a mechanical energy capacity of not more than 67,000 horsepower or an equivalent combination of electrical and mechanical energy capacities; (3) that produces at least 20 percent of its total useful energy in the form of thermal energy that is not used to produce electrical or mechanical power, and produces at least 20 percent of its total useful energy in the form of electrical or mechanical power (or a combination thereof); and (4) the energy efficiency percentage of which exceeds 60 percent. CHP property does not include property used to transport the energy source to the generating facility or to distribute energy produced by the facility.

The otherwise allowable credit with respect to CHP property is reduced to the extent the property has an electrical capacity or mechanical capacity in excess of any applicable limits. Property in excess of the applicable limit (15 megawatts or a mechanical energy capacity of more than 20,000 horsepower or an equivalent combination of electrical and mechanical energy capacities) is permitted to claim a fraction of the otherwise allowable credit. The fraction is equal to the applicable limit divided by the capacity of the property. For example, a 45 megawatt property would be eligible to claim 15/45ths, or one third, of the otherwise allowable credit. Again, no credit is allowed if the property exceeds the 50 megawatt or 67,000 horsepower limitations described above.

Additionally, systems whose fuel source is at least 90 percent open-loop biomass and that would qualify for the credit but for the failure to meet the efficiency standard are eligible for a credit that is reduced in proportion to the degree to which the system fails to meet the efficiency standard. For example, a system that would otherwise be required to meet the 60-percent efficiency standard, but which only achieves 30-percent efficiency, would be permitted a credit equal to one-half of the otherwise allowable credit (i.e., a 5-percent credit).

Election of energy credit in lieu of sec. 45 production tax credit

A taxpayer may make an irrevocable election to have certain qualified facilities placed in service in 2009 through 2013 (2012 for wind facilities) be treated as energy property eligible for a 30 percent investment credit under section 48. For this purpose, qualified facilities are facilities otherwise eligible for the section 45²³ production tax credit (other than refined coal, Indian coal, and solar facilities) with respect to which no credit under section 45 has been allowed. A taxpayer electing to treat a facility as energy property may not claim the production credit under section 45.

The eligible basis for the investment credit for taxpayers making this election is the basis of the depreciable (or amortizable) property that would comprise a section 45 credit-eligible facility. For example, in the case of a wind facility, only property eligible for five- year depreciation under section 168(e)(3)(b)(vi) is treated as credit-eligible energy property under the election.

5. Clean renewable energy bonds and new clean renewable energy bonds (secs. 54 and 54C)

Both Clean Renewable Energy Bonds (“CREBs”) and New Clean Renewable Energy Bonds (“New CREBs”) are types of tax credit bonds that can be used to finance certain facilities that produce electricity from certain renewable resources. CREBs are subject to a national volume cap of \$1.2 billion²⁴ and must be issued by December 31, 2009.²⁵ A taxpayer holding a CREB on a credit allowance date is entitled to a credit against its Federal income taxes. As discussed in more detail below, the annual credit with respect to a CREB is equal to the amount that the Treasury Secretary determines would allow the CREB to be issued at par and without interest.²⁶

New CREBs are subject to a national volume cap of \$2.4 billion.²⁷ A taxpayer holding a New CREB on a credit allowance date is entitled to a credit against its Federal income taxes. As discussed in more detail below, the annual credit with respect to a New CREB is equal to 70 percent of the credit that the Treasury Secretary determines would allow the New CREB to be issued at par and without interest.²⁸ Because the credit is only 70 percent of the credit that would

²³ See section II.A.3 of this pamphlet for a discussion of sec. 45 qualified facilities eligible for this provision.

²⁴ Sec. 54(f).

²⁵ Sec. 54D(a).

²⁶ Sec. 54(b).

²⁷ Sec. 54C(c); *see also* Notice 2009-33, 2009-17 I.R.B. (April 6, 2009) (soliciting applications for the present total national bond volume limitation for New CREBs and providing guidance on (1) eligibility requirements; (2) application requirements; (3) the method for allocating volume cap; and (4) certain other aspects of the rules).

²⁸ Sec. 54C(b).

permit the New CREB to be issued at par, it is assumed that the New CREB will be interest bearing and/or issued at a discount. The tax credit to a holder of a New CREB is treated as interest that is includible in the holder's gross income, and any interest paid on a New CREB is taxable.²⁹

CREBs

CREBs are defined as any bond issued by a "qualified issuer" if, in addition to the requirements discussed below, 95 percent or more of the proceeds from the issuance of such bonds are used to finance capital expenditures incurred by "qualified borrowers" for facilities that qualify for the tax credit under section 45 (other than Indian coal production facilities), without regard to the placed-in-service date requirements of that section.³⁰ The term "qualified issuer" includes (1) governmental bodies (including Indian tribal governments); (2) mutual or cooperative electric companies (described in section 501(c)(12) or section 1381(a)(2)(C), or a not-for-profit electric utility which has received a loan or guarantee under the Rural Electrification Act); and (3) clean energy bond lenders.³¹ The term "qualified borrower" includes a governmental body (including an Indian tribal government) and a mutual or cooperative electric company.³²

Projects that may be financed with CREBs include any facility owned by a qualified borrower that is functionally related and subordinate (as determined under Treas. Reg. sec. 1.103-8(a)(3)) to any qualified facility described in sections 45(d)(1) through (d)(9) (determined without regard to any placed in service date) and owned by such qualified borrower.³³

The credit rate on a CREB is determined by the Secretary and is to be a rate that permits issuance of CREBs without discount and interest cost to the qualified issuer.³⁴ The credit accrues quarterly and is includible in gross income (as if it were an interest payment on the bond), and can be claimed against regular income tax liability and alternative minimum tax liability.

CREBs are subject to a maximum maturity limitation.³⁵ The maximum maturity is the term which the Secretary estimates will result in the present value of the obligation to repay the

²⁹ Sec. 54A(f).

³⁰ Sec. 54(d).

³¹ Sec. 54(j)(4).

³² Sec. 54(j)(5).

³³ Internal Revenue Service, Notice 2006-7, Clean Renewable Energy Bonds, 2006-1 C.B. 559 (March 6, 2006).

³⁴ Sec. 54(b).

³⁵ Sec. 54(e).

principal on a CREBs being equal to 50 percent of the face amount of such bond. In addition, the Code requires level amortization of CREBs during the period such bonds are outstanding.

CREBs also are subject to the arbitrage requirements of section 148 that apply to traditional tax-exempt bonds. Principles under section 148 and the regulations thereunder apply for purposes of determining the yield restriction and arbitrage rebate requirements applicable to CREBs.³⁶

To qualify as CREBs, the qualified issuer must reasonably expect to and actually spend 95 percent or more of the proceeds of from the issuance of such bonds on qualified projects within the five-year period that begins on the date of issuance.³⁷ To the extent less than 95 percent of the proceeds are used to finance qualified projects during the five-year spending period, bonds will continue to qualify as CREBs if unspent proceeds are used within 90 days from the end of such five-year period to redeem any “nonqualified bonds.” The five-year spending period may be extended by the Secretary upon the qualified issuer’s request demonstrating that the failure to satisfy the five-year requirement is due to reasonable cause and the projects will continue to proceed with due diligence.

Allocations of CREB authority were made in 2006 and 2008. The table below reflects those allocations.

³⁶ Sec. 54(i).

³⁷ Sec. 54(h).

Table 1.–Clean Renewable Energy Bond Allocations³⁸ (2006 and 2008)		
Type of Borrower	Type of Project	Number of Projects
Governmental	Solar	539
	Wind	187
	Landfill gas	64
	Open loop biomass	1
	Closed loop biomass	3
	Trash combustion	3
	Hydropower	13
Cooperatives	Solar	34
	Wind	27
	Landfill gas	17
	Open loop biomass	13
	Hydropower	12
	Refined coal	1

³⁸ This table is based on Announcement 2006-181 (November 20, 2006) and Announcement 2008-16 (February 8, 2008). Pursuant to the Energy Tax Incentives Act of 2005 (Pub. L. No. 109-58), the Treasury Department allocated \$800 million of CREBs based on a “smallest-to-largest” project amount methodology -- beginning with the project requesting the smallest dollar amount and proceeding thereafter to projects for successively larger dollar amounts until the total national volume cap of \$800 million was allocated among 610 projects (some of the allocations were subsequently relinquished). The allocations for governmental borrowers ranged from \$23,000 to approximately \$3.2 million. The allocations for cooperatives ranged from \$120,548 to \$31 million. The Tax Relief and Health Care Act of 2006 (Pub. L. No. 109-432) increased the available national allocation from \$800 million to \$1.2 billion. In 2008, the Treasury Department made a second round of allocations of approximately \$406 million distributed among another 312 projects. For the second round, the allocations for governmental borrowers ranged from \$15,000 to \$2.95 million, and \$300,000 to \$30 million for cooperative borrowers.

New CREBs

Section 107 of the Energy Improvement and Extension Act of 2008 (Division B of Pub. L. No. 110-343) added a new section 54C of the Code for new clean renewable energy bonds (“New CREBs”). New CREBs may be issued by “qualified issuers” to finance “qualified renewable energy facilities.” Qualified renewable energy facilities are facilities that: (1) qualify for the tax credit under section 45 (other than Indian coal and refined coal production facilities), without regard to the placed-in-service date requirements of that section; and (2) are owned by a public power provider, governmental body, or cooperative electric company.

The term “qualified issuer” includes: (1) public power providers; (2) a governmental body; (3) cooperative electric companies; (4) a not-for-profit electric utility that has received a loan or guarantee under the Rural Electrification Act; and (5) clean renewable energy bond lenders. The term “public power provider” means a State utility with a service obligation, as such terms are defined in section 217 of the Federal Power Act (as in effect on the date of the enactment of this paragraph). A “governmental body” means any State or Indian tribal government, or any political subdivision thereof. The term “cooperative electric company” means a mutual or cooperative electric company (described in section 501(c)(12) or section 1381(a)(2)(C)). A clean renewable energy bond lender means a cooperative that is owned by, or has outstanding loans to, 100 or more cooperative electric companies and is in existence on February 1, 2002 (including any affiliated entity which is controlled by such lender).

There is a national limitation for New CREBs of \$2.4 billion.³⁹ No more than one third of the national limit may be allocated to projects of public power providers, governmental bodies, or cooperative electric companies. Allocations to governmental bodies and cooperative electric companies may be made in the manner the Secretary determines appropriate. Allocations to projects of public power providers shall be made, to the extent practicable, in such manner that the amount allocated to each such project bears the same ratio to the cost of such project as the maximum allocation limitation to projects of public power providers bears to the cost of all such projects.

New CREBs are a type of qualified tax credit bond for purposes of section 54A of the Code. As such, 100 percent of the available project proceeds of New CREBs must be used within the three-year period that begins on the date of issuance.⁴⁰ Available project proceeds are proceeds from the sale of the bond issue less issuance costs (not to exceed two percent) and any investment earnings on such sale proceeds. To the extent less than 100 percent of the available project proceeds are used to finance qualified projects during the three-year spending period, bonds will continue to qualify as New CREBs if unspent proceeds are used within 90 days from the end of such three-year period to redeem bonds. The three-year spending period may be extended by the Secretary upon the qualified issuer’s request demonstrating that the failure to

³⁹ Sec. 54C(c); *see also* Notice 2009-33. Section 1111 of Title I of Division B of the American Recovery and Reinvestment Act of 2009 (Pub. L. No. 111-5) increased the national bond volume limitation for New CREBs by \$1.6 billion, from \$800 million to \$2.4 billion.

⁴⁰ Sec. 54A(d)(2).

satisfy the three-year requirement is due to reasonable cause and the projects will continue to proceed with due diligence.

New CREBs generally are subject to the arbitrage requirements of section 148.⁴¹ However, available project proceeds invested during the three-year spending period are not subject to the arbitrage restrictions (i.e., yield restriction and rebate requirements). In addition, amounts invested in a reserve fund are not subject to the arbitrage restrictions to the extent: (1) such fund is funded at a rate not more rapid than equal annual installments; (2) such fund is funded in a manner reasonably expected to result in an amount not greater than an amount necessary to repay the issue; and (3) the yield on such fund is not greater than the average annual interest rate of tax-exempt obligations having a term of 10 years or more that are issued during the month the New CREBs are issued.

As with other tax credit bonds, a taxpayer holding a New CREB on a credit allowance date is entitled to a tax credit; the credit rate on New CREBs is set by the Secretary at a rate that is 70 percent of the rate that would permit issuance of such bonds without discount and interest cost to the issuer.⁴² The Secretary determines credit rates for tax credit bonds based on general assumptions about credit quality of the class of potential eligible issuers and such other factors as the Secretary deems appropriate. The Secretary may determine credit rates based on general credit market yield indexes and credit ratings.⁴³

The amount of the tax credit is determined by multiplying the bond's credit rate by the face amount of the holder's bond. The credit accrues quarterly, is includible in gross income (as if it were an interest payment on the bond), and can be claimed against regular income tax liability and alternative minimum tax liability. Unused credits may be carried forward to succeeding taxable years. In addition, credits may be separated from the ownership of the underlying bond similar to how interest coupons can be stripped for interest-bearing bonds.

An issuer of New CREBs is treated as meeting the "prohibition on financial conflicts of interest" requirement in section 54A(d)(6) if it certifies that it satisfies (1) applicable State and local law requirements governing conflicts of interest and (2) any additional conflict of interest rules prescribed by the Secretary with respect to any Federal, State, or local government official directly involved with the issuance of New CREBs.

⁴¹ Sec. 54A(d)(4).

⁴² Given the differences in credit quality and other characteristics of individual issuers, the Secretary cannot set credit rates in a manner that will allow each issuer to issue tax credit bonds at par.

⁴³ See Internal Revenue Service, Notice 2009-15, *Credit Rates on Tax Credit Bonds*, 2009-6 I.R.B. 1 (January 22, 2009).

6. Five-year cost recovery of certain energy property (sec. 168)

In general

A taxpayer is allowed to recover, through annual depreciation deductions, the cost of certain property used in a trade or business or for the production of income. The amount of the depreciation deduction allowed with respect to tangible property for a taxable year is determined under the modified accelerated cost recovery system (“MACRS”). Under MACRS, different types of property are generally assigned applicable recovery periods and depreciation methods. The recovery periods applicable to most tangible personal property (generally tangible property other than residential rental property and nonresidential real property) range from three to 25 years. The depreciation methods generally applicable to tangible personal property are the 200-percent and 150-percent declining balance methods, switching to the straight-line method for the taxable year in which the depreciation deduction would be maximized.⁴⁴ In general, the recovery periods applicable to real property are 39 years for non-residential real property and 27.5 years for residential rental property. The depreciation method for real property is the straight-line method.

Under MACRS, the full basis of depreciable property is recovered by the taxpayer over the applicable recovery period; there is no need to estimate salvage value. Furthermore, under MACRS, the applicable recovery period need not (and typically does not) correspond to the actual economic life of the asset subject to depreciation. In general, however, MACRS generally provides for longer recovery periods for longer lived assets.

Certain energy property

The Code provides a five-year statutory recovery period for certain energy property,⁴⁵ including (i) equipment which uses solar and wind energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat, except property used to generate energy for the purposes of heating a swimming pool; (ii) equipment which uses solar energy to illuminate the inside of a structure using fiber-optic distributed sunlight;⁴⁶ (iii) equipment used to produce, distribute, or use energy derived from a geothermal deposit,⁴⁷ but only, in the case of electricity generated by geothermal power, up to (but not including) the

⁴⁴ For certain property, including tangible property used predominantly outside the United States, tax-exempt use property, tax-exempt bond-financed property, and certain other property, the MACRS “alternative depreciation system” of section 168(g) applies, generally increasing recovery periods and requiring straight-line depreciation.

⁴⁵ Sec. 168(e)(3)(B)(vi)(I).

⁴⁶ Only with respect to periods ending before January 1, 2017.

⁴⁷ Geothermal deposit is defined by reference to section 613(e)(2) as a geothermal reservoir consisting of natural heat which is stored in rocks or in an aqueous liquid or vapor (whether or not under pressure).

electrical transmission stage; and (iv) qualified fuel cell property⁴⁸ or qualified microturbine property.⁴⁹

Biomass property

Certain biomass property has a statutory recovery period of five years.⁵⁰ For purposes of this provision, biomass property includes (i) a boiler, the primary fuel for which will be an alternate substance; (ii) a burner (including necessary on-site equipment to bring the alternate substance to the burner) for a combustor other than a boiler if the primary fuel for such burner will be an alternate substance; and (iii) equipment for converting an alternate substance into a qualified fuel.⁵¹ Such property also includes pollution control equipment⁵² required (by Federal, State, or local regulations) to be installed on or in connection with the above mentioned property and equipment used for the unloading, transfer, storage, reclaiming from storage, and preparation (including, but not limited to, washing, crushing, drying, and weighing) at the point of use of an alternate substance for use in equipment described above.⁵³

For purposes of this provision, the term “alternate substance” means any substance other than oil and natural gas, and any product of oil and natural gas.

The property must also be a “qualifying small power production facility.” For purposes of this provision, the term “qualifying small power production facility” means a “small power production facility” that the Federal Power Commission determines, by rule, meets such requirements (including requirements respecting fuel use, fuel efficiency, and reliability) as the

⁴⁸ Qualified fuel cell property is defined as a fuel cell power plant which has a nameplate capacity of at least 0.5 kilowatt of electricity using an electrochemical process, and has an electricity-only generation efficiency greater than 30 percent.

⁴⁹ Qualified microturbine property is defined as a stationary microturbine power plant which has a nameplate capacity of less than 2,000 kilowatts, and has an electricity-only generation efficiency of not less than 26 percent at International Standard Organization conditions.

⁵⁰ Sec. 168(e)(3)(B)(vi)(II).

⁵¹ This definition is included by reference to section 48(l)(15) as in effect on the day before the date of the enactment (Nov. 5, 1990) of the Revenue Reconciliation Act of 1990.

The term “qualified fuel” means any synthetic solid fuel, and alcohol for fuel purposes if the primary source of energy for the facility producing the alcohol is not oil or natural gas or a product of oil or natural gas.

⁵² The term “pollution control equipment” does not include any equipment which is installed on or in connection with property which, as of October 1, 1978, was using coal (including lignite), and was required to be installed by Federal, State, or local regulations in effect on such date.

⁵³ This equipment also includes equipment used for the storage of fuel derived from garbage at the site at which such fuel was produced from garbage.

Commission may, by rule, prescribe, and which is owned by a person not primarily engaged in the generation or sale of electric power (other than electric power solely from cogeneration facilities or small power production facilities).⁵⁴ The term “small power production facility” means a facility which (i) produces electric energy solely by the use, as a primary energy source, of biomass, waste, renewable resources, geothermal resources, or any combination thereof; and (ii) has a power production capacity which, together with any other facilities located at the same site (as determined by the Federal Power Commission), is not greater than 80 megawatts.⁵⁵

7. Special allowance for cellulosic biofuel plant property (sec. 168(l))

The Code provides an additional first-year depreciation deduction equal to 50 percent of the adjusted basis of qualified cellulosic biofuel plant property. In order to qualify, the property generally must be placed in service before January 1, 2013.

Qualified cellulosic biofuel plant property means property used in the U.S. solely to produce cellulosic biofuel. For this purpose, cellulosic biofuel means any liquid fuel which is produced by any lignocellulosic or hemicellulosic matter that is available on a renewable or recurring basis. For example, lignocellulosic or hemicellulosic matter that is available on a renewable or recurring basis includes bagasse (from sugar cane), corn stalks, and switchgrass.

The additional first-year depreciation deduction is allowed for both regular tax and alternative minimum tax purposes for the taxable year in which the property is placed in service. The additional first-year depreciation deduction is subject to the general rules regarding whether an item is deductible under section 162 or subject to capitalization under section 263 or section 263A. The basis of the property and the depreciation allowances in the year of purchase and later years are appropriately adjusted to reflect the additional first-year depreciation deduction. In addition, the provision provides that there is no adjustment to the allowable amount of depreciation for purposes of computing a taxpayer’s alternative minimum taxable income with respect to property to which the provision applies. A taxpayer is allowed to elect out of the additional first-year depreciation for any class of property for any taxable year.

To qualify for the additional first-year depreciation deduction, the original use of the property must commence with the taxpayer after December 20, 2006. The property must be acquired by purchase (as defined under section 179(d)) by the taxpayer after December 20, 2006 and be placed in service before January 1, 2013. Property does not qualify if a binding written contract for the acquisition of such property was in effect on or before December 20, 2006.

Property that is manufactured, constructed, or produced by the taxpayer for use by the taxpayer qualifies if the taxpayer begins the manufacture, construction, or production of the property after December 20, 2006, and the property is placed in service before January 1, 2013

⁵⁴ This definition is included by reference to the Federal Power Act (16 U.S.C. 796(17)(C)), as in effect on September 1, 1986.

⁵⁵ This definition is included by reference to the Federal Power Act (16 U.S.C. 796(17)(A)), as in effect on September 1, 1986.

(and all other requirements are met). Property that is manufactured, constructed, or produced for the taxpayer by another person under a contract that is entered into prior to the manufacture, construction, or production of the property is considered to be manufactured, constructed, or produced by the taxpayer.

Qualified cellulosic biofuel plant property does not include property to which section 168(k) (providing “bonus depreciation”) applies; alternative depreciation property as defined under section 168(k)(2)(D)(i); tax-exempt bond financed property; or property for which the taxpayer has elected not to claim the special allowance under section 168(l). Recapture rules apply if the property ceases to be qualified cellulosic biofuel plant property.

B. Provisions Relating to Energy Conservation

1. Credit for nonbusiness energy property (sec. 25C)

In general

Section 25C provides a 30-percent credit for the purchase of qualified energy efficiency improvements to the envelope of existing homes. Additionally, section 25C provides a 30 percent credit for the purchase of (1) qualified natural gas, propane, or oil furnace or hot water boilers, (2) qualified energy efficient property, and (3) advanced main air circulating fans.

The credit applies to expenditures made after December 31, 2008 for property placed in service after December 31, 2008, and prior to January 1, 2011.⁵⁶ The aggregate amount of the credit allowed for a taxpayer for taxable years beginning in 2009 and 2010 is \$1,500.

Building envelope improvements

A qualified energy efficiency improvement is any energy efficiency building envelope component (1) that meets or exceeds the prescriptive criteria for such a component established by the 2000 International Energy Conservation Code⁵⁷ as supplemented and as in effect on August 8, 2005 (or, in the case of metal roofs with appropriate pigmented coatings, meets the Energy Star program requirements); (2) that is installed in or on a dwelling located in the United States and owned and used by the taxpayer as the taxpayer's principal residence; (3) the original use of which commences with the taxpayer; and (4) that reasonably can be expected to remain in use for at least five years. The credit is nonrefundable.

Building envelope components are: (1) insulation materials or systems which are specifically and primarily designed to reduce the heat loss or gain for a dwelling and which meet the prescriptive criteria for such material or system established by the 2009 International Energy Conservation Code, as such Code (including supplements) is in effect on the date of the enactment of the American Recovery and Reinvestment Tax Act of 2009 (February 17, 2009); (2) exterior windows (including skylights) and doors provided such component has a U-factor and a seasonal heat gain coefficient ("SHGC") of 0.3 or less; and (3) metal or asphalt roofs with appropriate pigmented coatings or cooling granules that are specifically and primarily designed to reduce the heat gain for a dwelling.

⁵⁶ With the exception of biomass fuel property, property placed in service after December 31, 2008 and prior to February 17, 2009 qualifies for the new 30 percent credit rate (and \$1,500 aggregate cap) if it met the efficiency standards of prior law for property placed in service during 2009. Biomass fuel property placed in service at any point in 2009 is governed by the new efficiency standard.

⁵⁷ This reference to the 2000 International Energy Conservation Code is superseded by the additional requirements described in the paragraph below regarding building envelope components.

Other eligible property

Qualified natural gas, propane, or oil furnace or hot water boilers

A qualified natural gas, propane, or oil hot water boiler is a natural gas, propane, or oil hot water boiler with an annual fuel utilization efficiency rate of at least 90. A qualified natural gas or propane furnace is a natural gas or propane furnace with an annual fuel utilization efficiency rate of at least 95. A qualified oil furnace is an oil furnace with an annual fuel utilization efficiency rate of at least 90.

Qualified energy-efficient property

Qualified energy-efficient property is: (1) an electric heat pump water heater which yields an energy factor of at least 2.0 in the standard Department of Energy test procedure, (2) an electric heat pump which achieves the highest efficiency tier of Consortium for Energy Efficiency, as in effect on January 1, 2009,⁵⁸ (3) a central air conditioner with energy efficiency of at least the highest efficiency tier established by the Consortium for Energy Efficiency as in effect on Jan. 1, 2009⁵⁹, (4) a natural gas, propane, or oil water heater which has an energy factor of at least 0.82 or thermal efficiency of at least 90 percent, and (5) biomass fuel property.

Biomass fuel property is a stove that burns biomass fuel to heat a dwelling unit located in the United States and used as a principal residence by the taxpayer, or to heat water for such dwelling unit, and that has a thermal efficiency rating of at least 75 percent as measured using a lower heating value. Biomass fuel is any plant-derived fuel available on a renewable or recurring basis, including agricultural crops and trees, wood and wood waste and residues (including wood pellets), plants (including aquatic plants, grasses, residues, and fibers).

Advanced main air circulating fan

An advanced main air circulating fan is a fan used in a natural gas, propane, or oil furnace originally placed in service by the taxpayer during the taxable year, and which has an annual electricity use of no more than two percent of the total annual energy use of the furnace (as determined in the standard Department of Energy test procedures).

⁵⁸ These standards are a seasonal energy efficiency ratio (“SEER”) greater than or equal to 15, an energy efficiency ratio (“EER”) greater than or equal to 12.5, and heating seasonal performance factor (“HSPF”) greater than or equal to 8.5 for split heat pumps, and SEER greater than or equal to 14, EER greater than or equal to 12, and HSPF greater than or equal to 8.0 for packaged heat pumps.

⁵⁹ These standards are a SEER greater than or equal to 16 and EER greater than or equal to 13 for split systems, and SEER greater than or equal to 14 and EER greater than or equal to 12 for packaged systems.

Additional rules

The taxpayer's basis in the property is reduced by the amount of the credit. Special proration rules apply in the case of jointly owned property, condominiums, and tenant-stockholders in cooperative housing corporations. If less than 80 percent of the property is used for nonbusiness purposes, only that portion of expenditures that is used for nonbusiness purposes is taken into account.

2. Credit for residential energy efficient property (sec. 25D)

In general

Section 25D provides a personal tax credit for the purchase of qualified solar electric property and qualified solar water heating property that is used exclusively for purposes other than heating swimming pools and hot tubs. The credit is equal to 30 percent of qualifying expenditures.

Section 25D also provides a 30 percent credit for the purchase of qualified geothermal heat pump property, qualified small wind energy property, and qualified fuel cell power plants. The credit for any fuel cell may not exceed \$500 for each 0.5 kilowatt of capacity.

The credit is nonrefundable. The credit with respect to all qualifying property may be claimed against the alternative minimum tax.

The credit applies to property placed in service prior to January 1, 2017

Qualified property

Qualified solar electric property is property that uses solar energy to generate electricity for use in a dwelling unit. Qualifying solar water heating property is property used to heat water for use in a dwelling unit located in the United States and used as a residence if at least half of the energy used by such property for such purpose is derived from the sun.

A qualified fuel cell power plant is an integrated system comprised of a fuel cell stack assembly and associated balance of plant components that (1) converts a fuel into electricity using electrochemical means, (2) has an electricity-only generation efficiency of greater than 30 percent, and (3) has a nameplate capacity of at least one-half kilowatt. The qualified fuel cell power plant must be installed on or in connection with a dwelling unit located in the United States and used by the taxpayer as a principal residence.

Qualified small wind energy property is property that uses a wind turbine to generate electricity for use in a dwelling unit located in the U.S. and used as a residence by the taxpayer.

Qualified geothermal heat pump property means any equipment which (1) uses the ground or ground water as a thermal energy source to heat the dwelling unit or as a thermal energy sink to cool such dwelling unit, (2) meets the requirements of the Energy Star program which are in effect at the time that the expenditure for such equipment is made, and (3) is

installed on or in connection with a dwelling unit located in the United States and used as a residence by the taxpayer.

Additional rules

The depreciable basis of the property is reduced by the amount of the credit. Expenditures for labor costs allocable to onsite preparation, assembly, or original installation of property eligible for the credit are eligible expenditures.

Special proration rules apply in the case of jointly owned property, condominiums, and tenant-stockholders in cooperative housing corporations. If less than 80 percent of the property is used for nonbusiness purposes, only that portion of expenditures that is used for nonbusiness purposes is taken into account.

3. Alternative and plug-in electric-drive motor vehicle credits (secs. 30, 30B, and 30D)

Present Law

Alternative motor vehicle credit (sec. 30B)

A credit is available for each new qualified fuel cell vehicle, hybrid vehicle, advanced lean burn technology vehicle, and alternative fuel vehicle placed in service by the taxpayer during the taxable year.⁶⁰ In general, the credit amount varies depending upon the type of technology used, the weight class of the vehicle, the amount by which the vehicle exceeds certain fuel economy standards, and, for some vehicles, the estimated lifetime fuel savings. The credit generally is available for vehicles purchased after 2005. The credit terminates after 2009, 2010, or 2014, depending on the type of vehicle.

In general, the credit is allowed to the vehicle owner, including the lessor of a vehicle subject to a lease. If the use of the vehicle is described in paragraphs (3) or (4) of section 50(b) (relating to use by tax-exempt organizations, governments, and foreign persons) and is not subject to a lease, the seller of the vehicle may claim the credit so long as the seller clearly discloses to the user in a document the amount that is allowable as a credit. A vehicle must be used predominantly in the United States to qualify for the credit. The portion of the credit attributable to vehicles of a character subject to an allowance for depreciation is treated as a portion of the general business credit.

Fuel cell vehicles

A qualified fuel cell vehicle is a motor vehicle that is propelled by power derived from one or more cells that convert chemical energy directly into electricity by combining oxygen with hydrogen fuel that is stored on board the vehicle and may or may not require reformation prior to use. A qualified fuel cell vehicle must be purchased before January 1, 2015. The amount of credit for the purchase of a fuel cell vehicle is determined by a base credit amount that

⁶⁰ Sec. 30B.

depends upon the weight class of the vehicle and, in the case of automobiles or light trucks, an additional credit amount that depends upon the rated fuel economy of the vehicle compared to a base fuel economy. For these purposes the base fuel economy is the 2002 model year city fuel economy rating for vehicles of various weight classes.⁶¹ Table 2, below, shows the base credit amounts.

Table 2.—Base Credit Amount for Fuel Cell Vehicles

Vehicle Gross Weight Rating (pounds)	Credit Amount
Vehicle ≤ 8,500	\$8,000
8,500 < vehicle ≤ 14,000	\$10,000
14,000 < vehicle ≤ 26,000	\$20,000
26,000 < vehicle	\$40,000

In the case of a fuel cell vehicle weighing less than 8,500 pounds and placed in service after December 31, 2009, the \$8,000 amount in Table 2, above is reduced to \$4,000.

Table 3, below, shows the additional credits for passenger automobiles or light trucks.

Table 3.—Credit for Qualified Fuel Cell Vehicles

Credit	If Fuel Economy of the Fuel Cell Vehicle Is:	
	at least	but less than
\$1,000	150% of base fuel economy	175% of base fuel economy
\$1,500	175% of base fuel economy	200% of base fuel economy
\$2,000	200% of base fuel economy	225% of base fuel economy
\$2,500	225% of base fuel economy	250% of base fuel economy
\$3,000	250% of base fuel economy	275% of base fuel economy
\$3,500	275% of base fuel economy	300% of base fuel economy
\$4,000	300% of base fuel economy	

⁶¹ See discussion surrounding Table 7, below.

Hybrid vehicles and advanced lean burn technology vehicles

Qualified hybrid vehicles

A qualified hybrid vehicle is a motor vehicle that draws propulsion energy from on-board sources of stored energy that include both an internal combustion engine or heat engine using combustible fuel and a rechargeable energy storage system (e.g., batteries). A qualified hybrid vehicle must be placed in service before January 1, 2011 (January 1, 2010 in the case of a hybrid vehicle weighing more than 8,500 pounds).

Hybrid vehicles that are automobiles and light trucks

In the case of an automobile or light truck (vehicles weighing 8,500 pounds or less), the amount of credit for the purchase of a hybrid vehicle is the sum of two components: (1) a fuel economy credit amount that varies with the rated fuel economy of the vehicle compared to a 2002 model year standard and (2) a conservation credit based on the estimated lifetime fuel savings of the qualified vehicle compared to a comparable 2002 model year vehicle that is powered solely by a gasoline or diesel internal combustion engine. A qualified hybrid automobile or light truck must have a maximum available power⁶² from the rechargeable energy storage system of at least four percent. In addition, the vehicle must meet or exceed certain Environmental Protection Agency (“EPA”) emissions standards. For a vehicle with a gross vehicle weight rating of 6,000 pounds or less, the applicable emissions standards are the Bin 5 Tier II emissions standards. For a vehicle with a gross vehicle weight rating greater than 6,000 pounds and less than or equal to 8,500 pounds, the applicable emissions standards are the Bin 8 Tier II emissions standards.

Table 4, below, shows the fuel economy credit available to a hybrid passenger automobile or light truck whose fuel economy (on a gasoline gallon equivalent basis) exceeds that of a base fuel economy.

Table 4.–Fuel Economy Credit

Credit	If Fuel Economy of the Hybrid Vehicle Is:	
	at least	but less than
\$400	125% of base fuel economy	150% of base fuel economy
\$800	150% of base fuel economy	175% of base fuel economy
\$1,200	175% of base fuel economy	200% of base fuel economy
\$1,600	200% of base fuel economy	225% of base fuel economy
\$2,000	225% of base fuel economy	250% of base fuel economy
\$2,400	250% of base fuel economy	

⁶² For hybrid passenger vehicles and light trucks, the term “maximum available power” means the maximum power available from the rechargeable energy storage system, during a standard 10 second pulse power or equivalent test, divided by such maximum power and the SAE net power of the heat engine. Sec. 30B(d)(3)(C)(i).

Table 5, below, shows the conservation credit.

Table 5.—Conservation Credit

Estimated Lifetime Fuel Savings (gallons of gasoline)	Conservation Amount
At least 1,200 but less than 1,800	\$250
At least 1,800 but less than 2,400	\$500
At least 2,400 but less than 3,000	\$750
At least 3,000	\$1,000

Advanced lean burn technology vehicles

The amount of credit for the purchase of an advanced lean burn technology vehicle is the sum of two components: (1) a fuel economy credit amount that varies with the rated fuel economy of the vehicle compared to a 2002 model year standard as described in Table 4, above, and (2) a conservation credit based on the estimated lifetime fuel savings of a qualified vehicle compared to a comparable 2002 model year vehicle as described in Table 5, above. The amounts of the credits are determined after an adjustment is made to account for the different BTU content of gasoline and the fuel utilized by the lean burn technology vehicle.

A qualified advanced lean burn technology vehicle is a passenger automobile or a light truck that incorporates direct injection, achieves at least 125 percent of the 2002 model year city fuel economy, and for 2004 and later model vehicles meets or exceeds certain Environmental Protection Agency emissions standards. For a vehicle with a gross vehicle weight rating of 6,000 pounds or less the applicable emissions standards are the Bin 5 Tier II emissions standards. For a vehicle with a gross vehicle weight rating greater than 6,000 pounds and less than or equal to 8,500 pounds, the applicable emissions standards are the Bin 8 Tier II emissions standards. A qualified advanced lean burn technology vehicle must be placed in service before January 1, 2011.

Limitation on number of qualified hybrid and advanced lean burn technology vehicles eligible for the credit

There is a limitation on the number of passenger and light truck qualified hybrid vehicles and advanced lean burn technology vehicles sold by each manufacturer of such vehicles that are eligible for the credit. Taxpayers may claim the full amount of the allowable credit up to the end of the first calendar quarter after the quarter in which the manufacturer records the 60,000th hybrid and advanced lean burn technology vehicle sale occurring after December 31, 2005. Taxpayers may claim one half of the otherwise allowable credit during the two calendar quarters subsequent to the first quarter after the manufacturer has recorded its 60,000th such sale. In the third and fourth calendar quarters subsequent to the first quarter after the manufacturer has recorded its 60,000th such sale, the taxpayer may claim one quarter of the otherwise allowable credit.

Thus, for example, summing the sales of qualified hybrid vehicles that are passenger vehicles or light trucks and all sales of qualified advanced lean burn technology vehicles, if a manufacturer records the sale of its 60,000th qualified vehicle in February of 2007, taxpayers purchasing such vehicles from the manufacturer may claim the full amount of the credit on their purchases of qualified vehicles through June 30, 2007. For the period July 1, 2007, through December 31, 2007, taxpayers may claim one half of the otherwise allowable credit on purchases of qualified vehicles of the manufacturer. For the period January 1, 2008, through June 30, 2008, taxpayers may claim one quarter of the otherwise allowable credit on the purchases of qualified vehicles of the manufacturer. After June 30, 2008, no credit may be claimed for purchases of such hybrid vehicles or advanced lean burn technology vehicles sold by the manufacturer.

Hybrid vehicles that are medium and heavy trucks

In the case of a qualified hybrid vehicle weighing more than 8,500 pounds, the amount of credit is determined by the estimated increase in fuel economy and the incremental cost of the hybrid vehicle compared to a comparable vehicle powered solely by a gasoline or diesel internal combustion engine and that is comparable in weight, size, and use of the vehicle. For a vehicle that achieves a fuel economy increase of at least 30 percent but less than 40 percent, the credit is equal to 20 percent of the incremental cost of the hybrid vehicle. For a vehicle that achieves a fuel economy increase of at least 40 percent but less than 50 percent, the credit is equal to 30 percent of the incremental cost of the hybrid vehicle. For a vehicle that achieves a fuel economy increase of 50 percent or more, the credit is equal to 40 percent of the incremental cost of the hybrid vehicle.

The credit is subject to certain maximum applicable incremental cost amounts. For a qualified hybrid vehicle weighing more than 8,500 pounds but not more than 14,000 pounds, the maximum allowable incremental cost amount is \$7,500. For a qualified hybrid vehicle weighing more than 14,000 pounds but not more than 26,000 pounds, the maximum allowable incremental cost amount is \$15,000. For a qualified hybrid vehicle weighing more than 26,000 pounds, the maximum allowable incremental cost amount is \$30,000.

A qualified hybrid vehicle weighing more than 8,500 pounds but not more than 14,000 pounds must have a maximum available power from the rechargeable energy storage system of at least 10 percent. A qualified hybrid vehicle weighing more than 14,000 pounds must have a maximum available power from the rechargeable energy storage system of at least 15 percent.⁶³

⁶³ In the case of such heavy-duty hybrid motor vehicles, the percentage of maximum available power is computed by dividing the maximum power available from the rechargeable energy storage system during a standard 10-second pulse power test, divided by the vehicle's total traction power. A vehicle's total traction power is the sum of the peak power from the rechargeable energy storage system and the heat (e.g., internal combustion or diesel) engine's peak power. If the rechargeable energy storage system is the sole means by which the vehicle can be driven, then the total traction power is the peak power of the rechargeable energy storage system.

Alternative fuel vehicle

The credit for the purchase of a new alternative fuel vehicle is 50 percent of the incremental cost of such vehicle, plus an additional 30 percent if the vehicle meets certain emissions standards. The incremental cost of any new qualified alternative fuel vehicle is the excess of the manufacturer’s suggested retail price for such vehicle over the price for a gasoline or diesel fuel vehicle of the same model. To be eligible for the credit, a qualified alternative fuel vehicle must be purchased before January 1, 2011.

The amount of the credit varies depending on the weight of the qualified vehicle. The credit is subject to certain maximum applicable incremental cost amounts. Table 6, below, shows the maximum permitted incremental cost for the purpose of calculating the credit for alternative fuel vehicles by vehicle weight class as well as the maximum credit amount for such vehicles.

Table 6.—Maximum Allowable Incremental Cost for Calculation of Alternative Fuel Vehicle Credit

Vehicle Gross Weight Rating (pounds)	Maximum Allowable Incremental Cost	Maximum Allowable Credit
Vehicle ≤ 8,500	\$5,000	\$4,000
8,500 < vehicle ≤ 14,000	\$10,000	\$8,000
14,000 < vehicle ≤ 26,000	\$25,000	\$20,000
26,000 < vehicle	\$40,000	\$32,000

Alternative fuels comprise compressed natural gas, liquefied natural gas, liquefied petroleum gas, hydrogen, and any liquid fuel that is at least 85 percent methanol. Qualified alternative fuel vehicles are vehicles that operate only on qualified alternative fuels and are incapable of operating on gasoline or diesel (except to the extent gasoline or diesel fuel is part of a qualified mixed fuel, described below).

Certain mixed fuel vehicles, that is vehicles that use a combination of an alternative fuel and a petroleum-based fuel, are eligible for a reduced credit. If the vehicle operates on a mixed fuel that is at least 75 percent alternative fuel, the vehicle is eligible for 70 percent of the otherwise allowable alternative fuel vehicle credit. If the vehicle operates on a mixed fuel that is at least 90 percent alternative fuel, the vehicle is eligible for 90 percent of the otherwise allowable alternative fuel vehicle credit.

Base fuel economy

The base fuel economy is the 2002 model year city fuel economy by vehicle type and vehicle inertia weight class. For this purpose, “vehicle inertia weight class” has the same meaning as when defined in regulations prescribed by the EPA for purposes of Title II of the

Clean Air Act. Table 7, below, shows the 2002 model year city fuel economy for vehicles by type and by inertia weight class.

Table 7.—2002 Model Year City Fuel Economy

Vehicle Inertia Weight Class (pounds)	Passenger Automobile (miles per gallon)	Light Truck (miles per gallon)
1,500	45.2	39.4
1,750	45.2	39.4
2,000	39.6	35.2
2,250	35.2	31.8
2,500	31.7	29.0
2,750	28.8	26.8
3,000	26.4	24.9
3,500	22.6	21.8
4,000	19.8	19.4
4,500	17.6	17.6
5,000	15.9	16.1
5,500	14.4	14.8
6,000	13.2	13.7
6,500	12.2	12.8
7,000	11.3	12.1
8,500	11.3	12.1

Plug-in electric-drive motor vehicle credit (sec. 30D)

Rules for taxable years beginning after December 31, 2008, with respect to vehicles acquired in that taxable year and before January 1, 2010

A credit is available for each qualified plug-in electric-drive motor vehicle placed in service. A qualified plug-in electric-drive motor vehicle is a motor vehicle that has at least four wheels, is manufactured for use on public roads, meets certain emissions standards (except for certain heavy vehicles), draws propulsion using a traction battery with at least four kilowatt-hours of capacity, and is capable of being recharged from an external source of electricity.

The base amount of the plug-in electric-drive motor vehicle credit is \$2,500, plus another \$417 for each kilowatt-hour of battery capacity in excess of four kilowatt-hours. The maximum credit for qualified vehicles weighing 10,000 pounds or less is \$7,500. This maximum amount increases to \$10,000 for vehicles weighing more than 10,000 pounds but not more than 14,000 pounds, to \$12,500 for vehicles weighing more than 14,000 pounds but not more than 26,000 pounds, and to \$15,000 for vehicle weighing more than 26,000 pounds.

In general, the credit is available to the vehicle owner, including the lessor of a vehicle subject to lease. If the qualified vehicle is used by certain tax-exempt organizations, governments, or foreign persons and is not subject to a lease, the seller of the vehicle may claim the credit so long as the seller clearly discloses to the user in a document the amount that is allowable as a credit. A vehicle must be used predominantly in the United States to qualify for the credit.

Once a total of 250,000 credit-eligible vehicles have been sold for use in the United States, the credit phases out over four calendar quarters. The phaseout period begins in the second calendar quarter following the quarter during which the vehicle cap has been reached. Taxpayers may claim one-half of the otherwise allowable credit during the first two calendar quarters of the phaseout period and twenty-five percent of the otherwise allowable credit during the next two quarters. After this, no credit is available.

The basis of any qualified vehicle is reduced by the amount of the credit. To the extent a vehicle is eligible for credit as a qualified plug-in electric-drive motor vehicle, it is not eligible for credit as a qualified hybrid vehicle under section 30B. The portion of the credit attributable to vehicles of a character subject to an allowance for depreciation is treated as part of the general business credit; the nonbusiness portion of the credit is allowable to the extent of the excess of the regular tax over the alternative minimum tax (reduced by certain other credits) for the taxable year.

Rules for vehicles acquired after December 31, 2009

For plug-in electric drive vehicles acquired after December 31, 2009, the maximum credit is capped at \$7,500 regardless of vehicle weight. In addition, after that date no credit is available for low speed plug-in vehicles or for plug-in vehicles weighing 14,000 pounds or more.

After December 31, 2009, the 250,000 total plug-in vehicle limitation is replaced with a 200,000 plug-in vehicles per manufacturer limitation. Under the new limitation, the credit phases out over four calendar quarters beginning in the second calendar quarter following the quarter in which the manufacturer limit is reached.

Credit for electric-drive low-speed vehicles, motorcycles, and three-wheeled vehicles (sec. 30)

A 10-percent credit for low-speed vehicles, motorcycles, and three-wheeled vehicles is available for vehicles that, generally, would otherwise meet the criteria of a qualified plug-in electric-drive motor vehicle but for the fact that they are low-speed vehicles or do not have at least four wheels. Two or three wheeled vehicles must have a battery capacity of at least 2.5 kilowatt-hours. Other vehicles must have a battery capacity of at least 4 kilowatt-hours. The

maximum credit for such vehicles is \$2,500. The credit is part of the general business credit. The credit is available for vehicles acquired after February 17, 2009 (the date of enactment of the American Recovery and Reinvestment Act of 2009), and before January 1, 2012.

Credit for converting a vehicle into a plug-in electric-drive motor vehicle (sec. 30B)

A 10-percent credit, up to \$4,000, is available for the cost of converting any motor vehicle into a qualified plug-in electric-drive motor vehicle. To be eligible for the credit, a qualified plug-in traction battery module must have a capacity of at least 4 kilowatt-hours. The credit is available for conversions made after February 17, 2009 (the date of enactment of the American Recovery and Reinvestment Act of 2009), and before January 1, 2012.

4. New energy efficient home credit (sec 45L of the Code)

The new energy efficient home credit is available to an eligible contractor for the construction of a qualified new energy-efficient home. To qualify as a new energy-efficient home, the home must be: (1) a dwelling located in the United States, (2) substantially completed after August 8, 2005, and (3) certified in accordance with guidance prescribed by the Secretary to achieve either a 30-percent or 50-percent reduction in heating and cooling energy consumption compared to a comparable dwelling constructed in accordance with the standards of chapter 4 of the 2003 International Energy Conservation Code as in effect (including supplements) on August 8, 2005, and any applicable Federal minimum efficiency standards for heating and cooling equipment.

The credit equals \$1,000 in the case of a new home that meets the 30 percent standard and \$2,000 in the case of a new home that meets the 50 percent standard.

With respect to homes that meet the 30-percent standard, one-third of such 30 percent savings must come from the building envelope, and with respect to homes that meet the 50-percent standard, one-fifth of such 50 percent savings must come from the building envelope.

Only manufactured homes are eligible for the \$1,000 credit. In lieu of meeting the 30 percent efficiency improvement relative to the standards of chapter 4 of the 2003 International Energy Conservation Code, manufactured homes certified by a method prescribed by the Administrator of the Environmental Protection Agency under the Energy Star Labeled Homes program are eligible for the \$1,000 credit provided criteria (1) and (2), above, are met.

Manufactured homes are homes that conform to Federal manufactured home construction and safety standards. The eligible contractor is the person who constructed the home, or in the case of a manufactured home, the producer of such home. The credit is part of the general business credit.

The credit applies to homes acquired prior to January 1, 2010.

5. Energy efficient appliance credit (sec. 45M of the Code)

In general

A credit is allowed for the eligible production of certain energy-efficient dishwashers, clothes washers, and refrigerators. The credit is part of the general business credit.

The credits are as follows:

Dishwashers

\$45 in the case of a dishwasher that is manufactured in calendar year 2008 or 2009 that uses no more than 324 kilowatt hours per year and 5.8 gallons per cycle, and

\$75 in the case of a dishwasher that is manufactured in calendar year 2008, 2009, or 2010 and that uses no more than 307 kilowatt hours per year and 5.0 gallons per cycle (5.5 gallons per cycle for dishwashers designed for greater than 12 place settings).

Clothes washers

\$75 in the case of a residential top-loading clothes washer manufactured in calendar year 2008 that meets or exceeds a 1.72 modified energy factor and does not exceed a 8.0 water consumption factor, and

\$125 in the case of a residential top-loading clothes washer manufactured in calendar year 2008 or 2009 that meets or exceeds a 1.8 modified energy factor and does not exceed a 7.5 water consumption factor,

\$150 in the case of a residential or commercial clothes washer manufactured in calendar year 2008, 2009 or 2010 that meets or exceeds a 2.0 modified energy factor and does not exceed a 6.0 water consumption factor, and

\$250 in the case of a residential or commercial clothes washer manufactured in calendar year 2008, 2009, or 2010 that meets or exceeds a 2.2 modified energy factor and does not exceed a 4.5 water consumption factor.

Refrigerators

\$50 in the case of a refrigerator manufactured in calendar year 2008 that consumes at least 20 percent but not more than 22.9 percent less kilowatt hours per year than the 2001 energy conservation standards,

\$75 in the case of a refrigerator that is manufactured in calendar year 2008 or 2009 that consumes at least 23 percent but no more than 24.9 percent less kilowatt hours per year than the 2001 energy conservation standards,

\$100 in the case of a refrigerator that is manufactured in calendar year 2008, 2009 or 2010 that consumes at least 25 percent but not more than 29.9 percent less kilowatt hours per year than the 2001 energy conservation standards, and

\$200 in the case of a refrigerator manufactured in calendar year 2008, 2009 or 2010 that consumes at least 30 percent less energy than the 2001 energy conservation standards.

Definitions

A dishwasher is any residential dishwasher subject to the energy conservation standards established by the Department of Energy. A refrigerator must be an automatic defrost refrigerator-freezer with an internal volume of at least 16.5 cubic feet to qualify for the credit. A clothes washer is any residential clothes washer, including a residential style coin operated washer, that satisfies the relevant efficiency standard.

The term “modified energy factor” means the modified energy factor established by the Department of Energy for compliance with the Federal energy conservation standard.

The term “gallons per cycle” means, with respect to a dishwasher, the amount of water, expressed in gallons, required to complete a normal cycle of a dishwasher.

The term “water consumption factor” means, with respect to a clothes washer, the quotient of the total weighted per-cycle water consumption divided by the cubic foot (or liter) capacity of the clothes washer.

Other rules

Appliances eligible for the credit include only those produced in the United States and that exceed the average amount of U.S. production from the two prior calendar years for each category of appliance. The aggregate credit amount allowed with respect to a taxpayer for all taxable years beginning after December 31, 2007 may not exceed \$75 million, with the exception that the \$200 refrigerator credit and the \$250 clothes washer credit are not limited. Additionally, the credit allowed in a taxable year for all appliances may not exceed two percent of the average annual gross receipts of the taxpayer for the three taxable years preceding the taxable year in which the credit is determined.

6. Qualified energy conservation bonds (sec. 54D)

Qualified Energy Conservation Bonds (“QEC bonds”) are a type of qualified tax credit bond for purposes of section 54A of the Code.⁶⁴ QEC bonds, which are subject to a national volume cap of \$3.2 billion⁶⁵ (discussed below) generally must be issued by a State or local

⁶⁴ Sec. 54A(d)(1)(C).

⁶⁵ The American Recovery and Reinvestment Act of 2009 increased the national volume cap to \$3.2 billion from \$800 million.

government and must be designated by the issuer as a QEC bond.⁶⁶ In addition, 100 percent of the available project proceeds of QEC bond issuance must be used for “qualified conservation purposes” (defined below).⁶⁷ A taxpayer holding a QEC bond on a credit allowance date is entitled to a credit against its Federal income taxes. As discussed in more detail below, the annual credit with respect to a QEC bond is equal to 70 percent of the credit that the Treasury Secretary determines would allow the QEC bond to be issued at par and without interest. Because the credit is only 70 percent of the credit that would permit the QEC bond to be issued at par and without interest, it is assumed that QEC bonds will be interest bearing and/or issued at a discount. The tax credit to a holder of a QEC bond is treated as interest that is includible in the holder’s gross income, and any interest paid on a QEC bond is taxable.⁶⁸

The term “qualified conservation purpose” means:

1. Capital expenditures incurred for purposes of (a) reducing energy consumption in publicly owned buildings by at least 20 percent; (b) implementing green community programs (including the use of loans, grants or other repayment mechanisms to implement such programs); (c) rural development involving the production of electricity from renewable energy resources; or (d) any facility eligible for the production tax credit under section 45 (other than Indian coal and refined coal production facilities);⁶⁹
2. Expenditures with respect to facilities or grants that support research in: (a) development of cellulosic ethanol or other nonfossil fuels; (b) technologies for the capture and sequestration of carbon dioxide produced through the use of fossil fuels; (c) increasing the efficiency of existing technologies for producing nonfossil fuels; (d) automobile battery technologies and other technologies to reduce fossil fuel consumption in transportation; and (e) technologies to reduce energy use in buildings;⁷⁰

⁶⁶ Sec. 54D(a). In addition, eligible issuer also include entities empowered to issue bonds on behalf of a State or local government and otherwise eligible issuers in conduit financing issues (as defined in Treas. Reg. sec. 1.150-1(b)). *See* Notice 2009-29, 2009-17 I.R.B. (April 6, 2009).

⁶⁷ *Id.*

⁶⁸ Sec. 54A(f).

⁶⁹ Sec. 54D(f)(1)(A). The American Recovery and Reinvestment Act of 2009 clarified that capital expenditures to implement green community programs include grants, loans and other repayment mechanisms to implement such programs. This expansion enables States to issue QEC bonds to finance, for example, retrofits of existing private buildings through loans and/or grants to individual homeowners or businesses, or through other repayment mechanisms. Other repayment mechanisms can include periodic fees assessed on a government bill or utility bill that approximates the energy savings of energy efficiency or conservation retrofits. Retrofits can include heating, cooling, lighting, water-saving, storm water-reducing, or other efficiency measures.

⁷⁰ Sec. 54D(f)(1)(B).

3. Mass commuting facilities and related facilities that reduce the consumption of energy, including expenditures to reduce pollution from vehicles used for mass commuting;⁷¹
4. Demonstration projects designed to promote the commercialization of: (a) green building technology; (b) conversion of agricultural waste for use in the production of fuel or otherwise; (c) advanced battery manufacturing technologies; (d) technologies to reduce peak-use of electricity; and (e) technologies for the capture and sequestration of carbon dioxide emitted from combusting fossil fuels in order to produce electricity;⁷² and
5. Public education campaigns to promote energy efficiency (other than movies, concerts, and other events held primarily for entertainment purposes).⁷³

There is a national limitation on QEC bonds of \$3.2 billion.⁷⁴ Allocations of QEC bonds are made to the States with sub-allocations to large local governments.⁷⁵ Allocations are made to the States according to their respective populations, reduced by any sub-allocations to large local governments (defined below) within the States. Sub-allocations to large local governments shall be an amount of the national qualified energy conservation bond limitation that bears the same ratio to the amount of such limitation that otherwise would be allocated to the State in which such large local government is located as the population of such large local government bears to the population of such State. The term “large local government” means: any municipality or county if such municipality or county has a population of 100,000 or more. Indian tribal governments also are treated as large local governments for these purposes (without regard to population).

Each State or large local government receiving an allocation of QEC bonds may further allocate issuance authority to issuers within such State or large local government. However, any allocations to issuers within the State or large local government must be made in a manner that results in not less than 70 percent of the allocation of QEC bonds to such State or large local government being used to designate bonds that are not private activity bonds (i.e., the bond cannot meet the private business tests or the private loan test of section 141); for purposes of applying this rule, any bond used for the purpose of providing grants, loans or other repayment mechanisms for capital expenditures to implement green community programs is not treated as a private activity bond.

⁷¹ Sec. 54D(f)(1)(C).

⁷² Sec. 54D(f)(1)(D).

⁷³ Sec. 54D(f)(1)(E).

⁷⁴ Sec. 54D(d).

⁷⁵ *See generally*, Sec. 54D(e). *See also* Notice 2009-29 for 2009 (listing allocations to States of the national QEC bond volume cap).

In the case of QEC bonds issued as private activity bonds, 100 percent of the available project proceeds must be used for capital expenditures⁷⁶. In addition, QEC bonds only may be issued by Indian tribal governments to the extent such bonds are issued for purposes that satisfy the present law requirements for tax-exempt bonds issued by Indian tribal governments (i.e., essential governmental functions and certain manufacturing purposes).⁷⁷

One-hundred percent of the available project proceeds with respect to an issuance of QEC bonds must be used within the three-year period that begins on the date of issuance.⁷⁸ Available project proceeds are proceeds from the sale of the issue less issuance costs (not to exceed two percent) and any investment earnings on such sale proceeds. To the extent that less than 100 percent of the available project proceeds with respect to an issuance of QEC bonds are used to finance qualified conservation purposes during the three-year spending period, such bonds will continue to qualify as QEC bonds if unspent proceeds are used within 90 days from the end of such three-year period to redeem such bonds. The three-year spending period may be extended by the Secretary upon the issuer's request if the issuer establishes that the failure to satisfy the three-year requirement is due to reasonable cause and the qualified expenditures will continue to proceed with due diligence.

QEC bonds generally are subject to the arbitrage requirements of section 148.⁷⁹ However, available project proceeds invested during the three-year spending period are not subject to the arbitrage restrictions (i.e., yield restriction and rebate requirements). In addition, amounts invested in a reserve fund are not subject to the arbitrage restrictions to the extent: (1) such fund is funded at a rate not more rapid than equal annual installments; (2) such fund is funded in a manner reasonably expected to result in an amount not greater than an amount necessary to repay the issue; and (3) the yield on such fund is not greater than the average annual interest rate of tax-exempt obligations having a term of 10 years or more that are issued during the month the QEC bonds are issued.

The maturity of QEC bonds is the term that the Secretary estimates will result in the present value of the obligation to repay the principal on such bonds being equal to 50 percent of the face amount of such bonds, using as a discount rate the average annual interest rate of tax-exempt obligations having a term of 10 years or more that are issued during the month the QEC bonds are issued.⁸⁰

As with other tax credit bonds, the taxpayer holding QEC bonds on a credit allowance date is entitled to a tax credit.⁸¹ The credit rate on the bonds is set by the Secretary at a rate that

⁷⁶ Sec. 54D(f)(2).

⁷⁷ Sec. 54D(h).

⁷⁸ Sec. 54A(d)(2).

⁷⁹ Sec. 54A(d)(4).

⁸⁰ Sec. 54A(d)(5).

⁸¹ Sec. 54D(b) and Sec. 54A(b).

is 70 percent of the rate that would permit issuance of such bonds without discount and interest cost to the issuer.⁸² The Secretary determines credit rates for tax credit bonds based on general assumptions about credit quality of the class of potential eligible issuers and such other factors as the Secretary deems appropriate. The Secretary may determine credit rates based on general credit market yield indexes and credit ratings.⁸³ The amount of the tax credit is determined by multiplying the bond's credit rate by the face amount on the holder's bond. The credit accrues quarterly, is includible in gross income (as if it were an interest payment on the bond), and can be claimed against regular income tax liability and alternative minimum tax liability. Unused credits may be carried forward to succeeding taxable years. In addition, credits may be separated from the ownership of the underlying bond similar to how interest coupons can be stripped for interest-bearing bonds.

Issuers of QEC bonds are required to certify that the financial disclosure requirements that applicable State and local law requirements governing conflicts of interest are satisfied with respect to such issue, as well as any other additional conflict of interest rules prescribed by the Secretary with respect to any Federal, State, or local government official directly involved with the issuance of QEC bonds.

The following table provides the allocation to States of the National Bond Volume cap for qualified energy conservation bonds.

⁸² Given the differences in credit quality and other characteristics of individual issuers, the Secretary cannot set credit rates in a manner that will allow each issuer to issue tax credit bonds at par.

⁸³ See Internal Revenue Service, Notice 2009-15, *Credit Rates on Tax Credit Bonds*, 2009-6 IRB 1 (January 22, 2009).

**Table 8.—Allocations to States of the National Bond Volume Cap
for Qualified Energy Conservations Bonds**

State or Territory	QEC Bond Allocations (in dollars)
Alabama	48,364,000
Alaska	7,120,000
Arizona	67,436,000
Arkansas	29,623,000
California	381,329,000
Colorado	51,244,000
Connecticut	36,323,000
Delaware	9,058,000
District of Columbia	6,140,000
Florida	190,146,000
Georgia	100,484,000
Hawaii	13,364,000
Idaho	15,809,000
Illinois	133,846,000
Indiana	66,155,000
Iowa	31,150,000
Kansas	29,070,000
Kentucky	44,291,000
Louisiana	45,759,000
Maine	13,657,000
Maryland	58,445,000
Massachusetts	67,413,000
Michigan	103,780,000
Minnesota	54,159,000
Mississippi	30,486,000
Missouri	61,329,000

**Table 8.—Allocations to States of the National Bond Volume Cap
for Qualified Energy Conservations Bonds**

State or Territory	QEC Bond Allocations (in dollars)
Montana	10,037,000
Nebraska	18,502,000
Nevada	26,975,000
New Hampshire	13,651,000
New Jersey	90,078,000
New Mexico	20,587,000
New York	202,200,000
North Carolina	95,677,000
North Dakota	6,655,000
Ohio	119,160,000
Oklahoma	37,787,000
Oregon	39,320,000
Pennsylvania	129,144,000
Rhode Island	10,901,000
South Carolina	46,475,000
South Dakota	8,343,000
Tennessee	64,476,000
Texas	252,378,000
Utah	28,389,000
Vermont	6,445,000
Virginia	80,600,000
Washington	67,944,000
West Virginia	18,824,000
Wisconsin	58,387,000
Wyoming	5,526,000

Table 8.—Allocations to States of the National Bond Volume Cap for Qualified Energy Conservations Bonds	
State or Territory	QEC Bond Allocations (in dollars)
American Samoa	673,000
Guam	1,826,000
Northern Marianas	899,000
Puerto Rico	41,021,000
US Virgin Islands	1,140,000
Total Allocation	3,200,000,000

7. Energy efficient commercial buildings deduction (sec. 179D)

In general

Code section 179D provides a deduction equal to energy-efficient commercial building property expenditures made by the taxpayer. Energy-efficient commercial building property expenditures are defined as property (1) which is installed on or in any building located in the United States that is within the scope of Standard 90.1-2001 of the American Society of Heating, Refrigerating, and Air Conditioning Engineers and the Illuminating Engineering Society of North America (“ASHRAE/IESNA”), (2) which is installed as part of (i) the interior lighting systems, (ii) the heating, cooling, ventilation, and hot water systems, or (iii) the building envelope, and (3) which is certified as being installed as part of a plan designed to reduce the total annual energy and power costs with respect to the interior lighting systems, heating, cooling, ventilation, and hot water systems of the building by 50 percent or more in comparison to a reference building which meets the minimum requirements of Standard 90.1-2001 (as in effect on April 2, 2003). The deduction is limited to an amount equal to \$1.80 per square foot of the property for which such expenditures are made. The deduction is allowed in the year in which the property is placed in service.

Certain certification requirements must be met in order to qualify for the deduction. The Secretary, in consultation with the Secretary of Energy, will promulgate regulations that describe methods of calculating and verifying energy and power costs using qualified computer software based on the provisions of the 2005 California Nonresidential Alternative Calculation Method Approval Manual or, in the case of residential property, the 2005 California Residential Alternative Calculation Method Approval Manual.

The Secretary is granted authority to prescribe procedures for the inspection and testing for compliance of buildings that are comparable, given the difference between commercial and

residential buildings, to the requirements in the Mortgage Industry National Accreditation Procedures for Home Energy Rating Systems.⁸⁴ Individuals qualified to determine compliance shall only be those recognized by one or more organizations certified by the Secretary for such purposes.

For energy-efficient commercial building property expenditures made by a public entity, such as public schools, the Secretary shall promulgate regulations that allow the deduction to be allocated to the person primarily responsible for designing the property in lieu of the public entity.

If a deduction is allowed under this section, the basis of the property shall be reduced by the amount of the deduction.

The deduction is effective for property placed in service prior to January 1, 2014.

Partial allowance of deduction

In the case of a building that does not meet the overall building requirement of a 50-percent energy savings, a partial deduction is allowed with respect to each separate building system that comprises energy efficient property and which is certified by a qualified professional as meeting or exceeding the applicable system-specific savings targets established by the Secretary of the Treasury. The applicable system-specific savings targets to be established by the Secretary are those that would result in a total annual energy savings with respect to the whole building of 50 percent, if each of the separate systems met the system specific target. The separate building systems are (1) the interior lighting system, (2) the heating, cooling, ventilation and hot water systems, and (3) the building envelope. The maximum allowable deduction is \$0.60 per square foot for each separate system.

Interim rules for lighting systems

In general, in the case of system-specific partial deductions, no deduction is allowed until the Secretary establishes system-specific targets.⁸⁵ However, in the case of lighting system retrofits, until such time as the Secretary issues final regulations, the system-specific energy savings target for the lighting system is deemed to be met by a reduction in Lighting Power Density of 40 percent (50 percent in the case of a warehouse) of the minimum requirements in Table 9.3.1.1 or Table 9.3.1.2 of ASHRAE/IESNA Standard 90.1-2001. Also, in the case of a lighting system that reduces lighting power density by 25 percent, a partial deduction of 30 cents per square foot is allowed. A pro-rated partial deduction is allowed in the case of a lighting system that reduces lighting power density between 25 percent and 40 percent. Certain lighting

⁸⁴ See IRS notice 2006-52 and 2008-40.

⁸⁵ IRS Notice 2008-40 has set a target of a 10 percent reduction in total energy and power costs with respect to the building envelope, and 20 percent each with respect to the interior lighting system and the heating, cooling, ventilation and hot water systems.

level and lighting control requirements must also be met in order to qualify for the partial lighting deductions under the interim rule.

8. Energy conservation subsidies provided by public utilities (sec. 136)

An exclusion from gross income is provided for the value of any subsidy provided by a public utility to a customer for the purchase or installation of any energy conservation measure, meaning any installation or modification primarily designed to reduce consumption of electricity or natural gas or to improve the management of energy demand with respect to a dwelling unit.

No deduction or credit is allowed for any expenditure to the extent of the exclusion taken for any subsidy received, and the adjusted basis of the property is reduced by the amount excluded.

A “public utility” means a person engaged in the sale of electricity or natural gas to residential, commercial, or industrial customers for use by such customers, and such term includes the Federal Government, a State or local government, or any political subdivision or instrumentality thereof. The exclusion does not apply with respect to any payment to or from a qualified cogeneration facility or qualifying small power production facility pursuant to section 210 of the Public Utility Regulatory Policy Act of 1978.

C. Provisions Relating to Fossil Fuel Extraction

1. Credit for enhanced oil recovery costs (sec. 43)

Taxpayers may claim a credit equal to 15 percent of enhanced oil recovery (“EOR”) costs.⁸⁶ Qualified EOR costs include the following costs associated with an EOR project. An EOR project is generally a project that involves the use of one or more tertiary recovery methods (as defined in section 193(b)(3)) to increase the amount of recoverable domestic crude oil. Qualified costs include (1) amounts paid for depreciable tangible property; (2) intangible drilling and development expenses; (3) tertiary injectant expenses; and (4) construction costs for certain Alaskan natural gas treatment facilities.

The EOR credit is ratably reduced over a \$6 phase-out range when the reference price for domestic crude oil exceeds \$28 per barrel (adjusted for inflation after 1991). The reference price is determined based on the annual average price of domestic crude oil for the calendar year preceding the calendar year in which the taxable year begins.⁸⁷ The EOR credit is currently phased-out.

Taxpayers claiming the EOR credit must reduce by the amount of the credit any otherwise allowable deductions associated with EOR costs. In addition, to the extent a property’s basis would otherwise be increased by any EOR costs, such basis is reduced by the amount of the EOR credit.

2. Credit for the production of Indian coal (sec. 45)

A credit is available for the production of Indian coal sold to an unrelated third party from a qualified facility for a seven-year period beginning January 1, 2006, and ending December 31, 2012. The amount of the credit for Indian coal is \$1.50 per ton for the first four years of the seven-year period and \$2.00 per ton for the last three years of the seven-year period. Beginning in calendar years after 2006, the credit amounts are indexed annually for inflation using 2005 as the base year.

A qualified Indian coal facility is a facility placed in service before January 1, 2009, that produces coal from reserves that on June 14, 2005, were owned by a Federally recognized tribe of Indians or were held in trust by the United States for a tribe or its members.

The credit is a component of the general business credit,⁸⁸ allowing excess credits to be carried back one year and forward up to 20 years. The credit is also subject to the alternative minimum tax.

⁸⁶ Sec. 43.

⁸⁷ Secs. 43(b) and 45K(d)(2)(C).

⁸⁸ Sec. 38(b)(8).

3. Marginal wells credit (sec. 45I)

The Code provides a \$3-per-barrel credit (adjusted for inflation) for the production of crude oil and a \$0.50-per-1,000-cubic-foot credit (also adjusted for inflation) for the production of qualified natural gas. In both cases, the credit is available only for domestic production from a “qualified marginal well.”

A qualified marginal well is defined as a domestic well: (1) production from which is treated as marginal production for purposes of the Code percentage depletion rules; or (2) that during the taxable year had average daily production of not more than 25 barrel equivalents and produces water at a rate of not less than 95 percent of total well effluent. The maximum amount of production on which credit could be claimed is 1,095 barrels or barrel equivalents.

The credit is not available to production occurring if the reference price of oil exceeds \$18 (\$2.00 for natural gas). The credit is reduced proportionately as for reference prices between \$15 and \$18 (\$1.67 and \$2.00 for natural gas). Currently the credit is phased out completely.

In the case of production from a qualified marginal well which is eligible for the credit allowed under section 45K for the taxable year, no marginal well credit is allowable unless the taxpayer elects not to claim the credit under section 45K with respect to the well. The section 45K credit is currently expired with respect to qualified natural gas and oil production. The credit is treated as a general business credit. Unused credits can be carried back for up to five years rather than the generally applicable carryback period of one year.

4. Recovery of intangible drilling and development costs (secs. 59, 263, and 291)

The Code provides special rules for the treatment of intangible drilling and development costs (“IDCs”). Under these special rules, an operator or working interest owner⁸⁹ that pays or incurs IDCs in the development of an oil or gas property located in the United States may elect either to expense or capitalize those costs.⁹⁰

IDCs include all expenditures made by an operator for wages, fuel, repairs, hauling, supplies, etc., incident to and necessary for the drilling of wells and the preparation of wells for the production of oil and gas. In addition, IDCs include the cost to operators of any drilling or development work done by contractors under any form of contract, including a turnkey contract. Such work includes labor, fuel, repairs, hauling, and supplies which are used (1) in the drilling, shooting, and cleaning of wells; (2) in the clearing of ground, draining, road making, surveying, and geological works as necessary in preparation for the drilling of wells; and (3) in the construction of such derricks, tanks, pipelines, and other physical structures as are necessary for

⁸⁹ An operator or working interest owner is defined as a person that holds a working or operating interest in any tract or parcel of land either as a fee owner or under a lease or any other form of contract granting working or operating rights.

⁹⁰ Sec. 263(c).

the drilling of wells and the preparation of wells for the production of oil and gas. Generally, IDCs do not include expenses for items that have a salvage value (such as pipes and casings) or items that are part of the acquisition price of an interest in the property.⁹¹ They also do not include the cost to operators (1) payable only out of production or gross or net proceeds from production, if the amounts are depletable income to the recipient, and (2) amounts properly allocable to the cost of depreciable property.

If an election to expense IDCs is made, the taxpayer deducts the amount of the IDCs as an expense in the taxable year the cost is paid or incurred. Generally, if IDCs are not expensed, but are capitalized, they may be recovered through depletion or depreciation, as appropriate. In the case of a nonproductive well (“dry hole”), IDCs may be deducted at the election of the operator.⁹² For an integrated oil company that has elected to expense IDCs, 30 percent of the IDCs on productive wells must be capitalized and amortized over a 60-month period.⁹³

Notwithstanding the fact that a taxpayer has made the election to deduct IDCs, the Code provides an additional election under which the taxpayer is allowed to capitalize and amortize certain IDCs over a 60-month period beginning with the month the expenditure was paid or incurred.⁹⁴ This election applies on an expenditure-by-expenditure basis; that is, for any particular taxable year, a taxpayer may deduct some portion of its IDCs and capitalize the rest under this provision. The election allows a taxpayer to reduce or eliminate the IDC adjustments or preferences under the alternative minimum tax.

The election to deduct IDCs applies only to those IDCs associated with domestic properties.⁹⁵ For this purpose, the United States includes certain wells drilled offshore.⁹⁶

⁹¹ Treas. Reg. sec. 1.612-4(a).

⁹² Treas. Reg. sec. 1.612-4(b)(4).

⁹³ Sec. 291(b)(1)(A). The IRS has ruled that, if a company that has capitalized and begun to amortize IDCs over a 60-month period pursuant to section 291 ceases to be an integrated oil company, it may not immediately write off the unamortized portion of the capitalized IDCs, but instead must continue to amortize the IDCs so capitalized over the 60-month amortization period. Rev. Rul. 93-26, 1993-1 C.B. 50.

⁹⁴ Sec. 59(e)(1).

⁹⁵ In the case of IDCs paid or incurred with respect to an oil or gas well located outside of the United States, the costs, at the election of the taxpayer, are either (1) included in adjusted basis for purposes of computing the amount of any deduction allowable for cost depletion or (2) capitalized and amortized ratably over a 10-year period beginning with the taxable year such costs were paid or incurred (sec. 263(i)).

⁹⁶ The term “United States” for this purpose includes the seabed and subsoil of those submarine areas that are adjacent to the territorial waters of the United States and over which the United States has exclusive rights, in accordance with international law, with respect to the exploration and exploitation of natural resources (i.e., the Continental Shelf area) (sec. 638).

Pursuant to a special exception, the uniform capitalization rules do not apply to IDCs incurred with respect to oil or gas wells that are otherwise deductible under the Code.⁹⁷

5. Deduction for qualified tertiary injectants (sec. 193)

Taxpayers engaged in petroleum extraction activities may generally deduct qualified tertiary injectant expenses used while applying a tertiary recovery method, including carbon dioxide augmented waterflooding and immiscible carbon dioxide displacement.⁹⁸ The deduction is available even if such costs are otherwise subject to capitalization. The deduction is permitted for the later of--(1) the tax year in which the injectant is injected or (2) the tax year in which the expenses are paid or incurred.⁹⁹ No deduction is permitted for expenditures for which a taxpayer has elected to deduct such costs under section 263(c) (intangible drilling costs) or if a deduction is allowed for such amounts under any other income tax provision.¹⁰⁰

A “qualified tertiary injectant expense” is defined as any cost paid or incurred for any tertiary injectant (other than a recoverable hydrocarbon injectant) which is used as part of a tertiary recovery method.¹⁰¹ The cost of a recoverable hydrocarbon injectant (which includes natural gas, crude oil and any other injectant with more than an insignificant amount of natural gas or crude oil) is not a qualified tertiary injectant expense unless the amount of the recoverable hydrocarbon injectant in the qualified tertiary injectant is insignificant.¹⁰²

6. Arbitrage exception for prepayments of natural gas (sec. 148)

Arbitrage restrictions

Interest on bonds issued by States or local governments to finance activities carried out or paid for by those entities generally is exempt from income tax. Restrictions are imposed on the ability of States or local governments to invest the proceeds of these bonds for profit (the “arbitrage restrictions”).¹⁰³ One such restriction limits the use of bond proceeds to acquire “investment-type property.” The term investment-type property includes the acquisition of property in a transaction involving a prepayment if a principal purpose of the prepayment is to

⁹⁷ Sec. 263A(c)(3).

⁹⁸ Sec. 193.

⁹⁹ Treas. Reg. sec. 1.193-1.

¹⁰⁰ Sec. 193(c).

¹⁰¹ Sec. 193(b). A tertiary recovery method is any of the nine methods described in section 212.78(c)(1) - (9) of the June 1979 energy regulations, as defined in former section 4996(b)(8)(C), or any other method approved by the Internal Revenue Service.

¹⁰² Sec. 193(b)(2).

¹⁰³ Sec. 148.

receive an investment return from the time the prepayment is made until the time payment otherwise would be made. A prepayment can produce prohibited arbitrage profits when the discount received for prepaying the costs exceeds the yield on the tax-exempt bonds. In general, prohibited prepayments include all prepayments that are not customary in an industry by both beneficiaries of tax-exempt bonds and other persons using taxable financing for the same transaction.

Arbitrage exceptions for certain prepayments

On August 4, 2003, the Treasury Department issued final regulations deeming to be customary, and not in violation of the arbitrage rules, certain prepayments for natural gas and electricity.¹⁰⁴ Generally, a qualified prepayment under the regulations requires that 90 percent of the natural gas or electricity purchased with the prepayment be used for a qualifying use. Generally, natural gas is used for a qualifying use if it is to be (1) furnished to retail gas customers of the issuing municipal utility who are located in the natural gas service area of the issuing municipal utility, however, gas used to produce electricity for sale is not included under this provision; (2) used by the issuing municipal utility to produce electricity that will be furnished to retail electric service area customers of the issuing utility; (3) used by the issuing municipal utility to produce electricity that will be sold to a utility owned by a governmental person and furnished to the service area retail electric customers of the purchaser; (4) sold to a utility that is owned by a governmental person if the requirements of (1), (2) or (3) are satisfied by the purchasing utility (treating the purchaser as the issuing utility); or (5) used to fuel the pipeline transportation of the prepaid gas supply. Electricity is used for a qualifying use if it is to be (1) furnished to retail service area electric customers of the issuing municipal utility or (2) sold to a municipal utility and furnished to retail electric customers of the purchaser who are located in the electricity service area of the purchaser.

The Energy Policy Act of 2005 (the “Act”) created a statutory exception to the general rule that tax-exempt bond-financed prepayments violate the arbitrage restrictions. Under the Act, the term “investment type property” does not include a prepayment under a qualified natural gas supply contract.

A contract is a qualified natural gas contract if the volume of natural gas secured for any year covered by the prepayment does not exceed the sum of (1) the average annual natural gas purchased (other than for resale) by customers of the utility within the service area of the utility (“retail natural gas consumption”) during the testing period, and (2) the amount of natural gas that is needed to fuel transportation of the natural gas to the governmental utility. The testing period is the 5-calendar-year period immediately preceding the calendar year in which the bonds are issued. A retail customer is one who does not purchase natural gas for resale. Natural gas used to generate electricity by a utility owned by a governmental unit is counted as retail natural gas consumption if the electricity was sold to retail customers within the service area of the governmental electric utility.

¹⁰⁴ Treas. Reg. sec. 1.148-1(e)(2)(iii).

Adjustments

The volume of gas permitted by the general rule is reduced by natural gas otherwise available on the date of issuance. Specifically, the amount of natural gas permitted to be acquired under a qualified natural gas contract for any period is to be reduced by the applicable share of natural gas held by the utility on the date of issuance of the bonds and natural gas that the utility has a right to acquire for the prepayment period (determined as of the date of issuance). For purposes of the preceding sentence, “applicable share” means, with respect to any period, the natural gas allocable to such period if the gas were allocated ratably over the period to which the prepayment relates.

For purposes of the safe harbor, if after the close of the testing period and before the issue date of the bonds (1) the government utility enters into a contract to supply natural gas (other than for resale) for a commercial person for use at a property within the service area of such utility and (2) the gas consumption for such property was not included in the testing period or the ratable amount of natural gas to be supplied under the contract is significantly greater than the ratable amount of gas supplied to such property during the testing period, then the amount of gas permitted to be purchased may be increased to accommodate the contract.

The calculation of average annual retail natural gas consumption for purposes of the safe harbor, however, is not to exceed the annual amount of natural gas reasonably expected to be purchased (other than for resale) by persons who are located within the service area of such utility and who, as of the date of issuance of the issue, are customers of such utility.

Intentional acts

The safe harbor does not apply if the utility engages in intentional acts to render (1) the volume of natural gas covered by the prepayment to be in excess of that needed for retail natural gas consumption, and (2) the amount of natural gas that is needed to fuel transportation of the natural gas to the governmental utility.

Definition of service area

Service area is defined as (1) any area throughout which the governmental utility provided (at all times during the testing period) in the case of a natural gas utility, natural gas transmission or distribution services, or in the case of an electric utility, electricity distribution services; (2) limited areas contiguous to such areas; and (3) any area recognized as the service area of the governmental utility under State or Federal law. Contiguous areas are limited to any area within a county contiguous to the area described in item (1) above in which retail customers of the utility are located if such area is not also served by another utility providing the same service.

Ruling request for higher prepayment amounts

Upon written request, the Secretary may allow an issuer to prepay for an amount of gas greater than that allowed by the safe harbor based on objective evidence of growth in gas consumption or population that demonstrates that the amount permitted by the exception is insufficient.

Application to joint action agencies

In a number of States, joint action agencies serve as purchasing agents for their member municipal gas utilities. The provision is intended to allow municipal utilities in a State to participate in such buying arrangements as established under State law, subject to the same limitations that would apply if an individual utility were to purchase gas directly. When acting on behalf of its municipal gas utility members, the total amount of gas that can be purchased by a joint action agency under the provision's exception to the arbitrage rules is the aggregate of what each such member could purchase for itself on a direct basis. Thus, with respect to qualified natural gas supply contracts entered into by joint action agencies for or on behalf of one or more member municipal utilities, the requirements of the safe harbor are tested at the individual municipal utility level based on the amount of gas that would be allocated to such member during any year covered by the contract.

7. Amortization of geological and geophysical expenditures (sec. 167(h))

Geological and geophysical expenditures (“G&G costs”) are costs incurred by a taxpayer for the purpose of obtaining and accumulating data that will serve as the basis for the acquisition and retention of mineral properties by taxpayers exploring for minerals. G&G costs incurred by independent producers and smaller integrated oil companies in connection with oil and gas exploration in the United States may generally be amortized over two years.¹⁰⁵

Major integrated oil companies are required to amortize all G&G costs over seven years for costs paid or incurred after December 19, 2007 (the date of enactment of the Energy Independence and Security Act of 2007, Pub. L. No. 110-140).¹⁰⁶ A major integrated oil company, as defined in section 167(h)(5)(B), is an integrated oil company¹⁰⁷ which has an average daily worldwide production of crude oil of at least 500,000 barrels for the taxable year, had gross receipts in excess of one billion dollars for its last taxable year ending during the calendar year 2005, and generally has an ownership interest in a crude oil refiner of 15 percent or more.

¹⁰⁵ This amortization rule applies to G&G costs incurred in taxable years beginning after August 8, 2005, the date of enactment of the Energy Policy Act of 2005, Pub. L. No. 109-58. Prior to the effective date, G&G costs associated with productive properties were generally deductible over the life of such properties, and G&G costs associated with abandoned properties were generally deductible in the year of abandonment.

¹⁰⁶ Prior to the enactment of the Energy Independence and Security Act of 2007, major integrated oil companies were required to amortize G&G costs paid or incurred after May 17, 2006 over five years, as provided in Energy Tax Incentives Act of 2005.

¹⁰⁷ Generally, an integrated oil company is a producer of crude oil that engages in the refining or retail sale of petroleum products in excess of certain threshold amounts.

In the case of abandoned property, remaining basis may not be recovered in the year of abandonment of a property, but instead must continue to be amortized over the remaining applicable amortization period.

8. Passive loss rules for working interests in oil and gas property (sec. 469)

Present Law

The passive loss rules limit deductions and credits from passive trade or business activities.¹⁰⁸ Deductions attributable to passive activities, to the extent they exceed income from passive activities, generally may not be deducted against other income. Deductions and credits that are suspended under these rules are carried forward and treated as deductions and credits from passive activities in the next year. The suspended losses from a passive activity are allowed in full when a taxpayer disposes of his entire interest in the passive activity to an unrelated person.

Losses from certain working interests in oil and gas property are not limited under the passive loss rule. Thus, losses and credits from such interests can be used to offset other income of the taxpayer without limitation under the passive loss rule. A passive activity does not include a working interest in any oil or gas property that the taxpayer holds directly or through an entity that does not limit the liability of the taxpayer with respect to the interest. This rule applies without regard to whether the taxpayer materially participates in the activity. If the taxpayer has a loss from a working interest in any oil or gas property that is treated as not from a passive activity, then net income from the property for any succeeding taxable year is treated as income of the taxpayer that is not from a passive activity.

In general, a working interest is an interest with respect to an oil and gas property that is burdened with the cost of development and operation of the property. Rights to overriding royalties, production payments, and the like, do not constitute working interests, because they are not burdened with the responsibility to share expenses of drilling, completing, or operating oil and gas property. Similarly, contract rights to extract or share in oil and gas, or in profits from extraction, without liability to share in the costs of production, do not constitute working interests. Income from such interests generally is considered to be portfolio income.

A working interest generally has characteristics such as responsibility for signing authorizations for expenditures with respect to the activity, receiving periodic drilling and completion reports, receiving periodic reports regarding the amount of oil extracted, possession of voting rights proportionate to the percentage of the working interest possessed by the taxpayer, the right to continue activities if the present operator decides to discontinue operations, a proportionate share of tort liability with respect to the property (e.g., if a well catches fire), and some responsibility to share in further costs with respect to the property in the event that a decision is made to spend more than amounts already contributed.

¹⁰⁸ Sec. 469.

However, the fact that a taxpayer is entitled to decline, or does decline, to make additional contributions under a buyout, nonparticipation, or similar arrangement, does not prevent such taxpayer's possessing a working interest. In addition, the fact that tort liability may be insured against does not prevent such taxpayer's possessing a working interest.

When the taxpayer's form of ownership limits the liability of the taxpayer, the interest possessed by such taxpayer is not a working interest for purposes of the passive loss provision. Thus, for purposes of the passive loss rules, an interest owned by a limited partnership is not treated as a working interest with regard to any limited partner, and an interest owned by an S corporation is not treated as a working interest with regard to any shareholder. The same result follows with respect to any form of ownership that is substantially equivalent in its effect on liability to a limited partnership interest or interest in an S corporation, even if different in form.

When an interest is not treated as a working interest because the taxpayer's form of ownership limits his liability, the general rules regarding material participation apply to determine whether the interest is treated as in a passive activity. Thus, for example, a limited partner's interest generally is treated as in a passive activity. In the case of a shareholder in an S corporation, the general facts and circumstances test for material participation applies and the working interest exception does not apply, because the form of ownership limits the taxpayer's liability.

In determining whether the taxpayer's form of ownership limits his liability, the rule described in the two prior paragraphs is applied by looking through tiered entities. For example, a general partner in a partnership that owns a limited partnership interest in a partnership that owns a working interest is not treated as owning a working interest.

A special rule applies in any case where, for a prior taxable year, net losses from a working interest in a property were treated by the taxpayer as not from a passive activity. In such a case, any net income realized by the taxpayer from the property (or from any substituted basis property, e.g., property acquired in a sec. 1031 like kind exchange for such property) in a subsequent year also is treated as active. Under this rule, for example, if a taxpayer claims losses for a year with regard to a working interest and then, after the property to which the interest relates begins to generate net income, transfers the interest to an S corporation in which he is a shareholder, or to a partnership in which he has an interest as a limited partner, his interest with regard to the property continues to be treated as not passive.

9. Depletion (secs. 611-613A)

In general

Depletion, like depreciation, is a form of capital cost recovery. In both cases, the taxpayer is allowed a deduction in recognition of the fact that an asset is being expended in order to produce income.¹⁰⁹ Certain costs incurred prior to drilling an oil or gas property or extracting

¹⁰⁹ In the context of mineral extraction, depreciable assets are generally used to recover depletable assets. For example, natural gas gathering lines, used to collect and deliver natural gas, have a class life of 14 years and a depreciation recovery period of seven years.

minerals are recovered through the depletion deduction. These include the cost of acquiring the lease or other interest in the property.

Depletion is available to any person having an economic interest in a producing property. An economic interest is possessed in every case in which the taxpayer has acquired by investment any interest in minerals in place, and secures, by any form of legal relationship, income derived from the extraction of the mineral, to which it must look for a return of its capital. Thus, for example, both working interests and royalty interests in an oil- or gas-producing property constitute economic interests, thereby qualifying the interest holders for depletion deductions with respect to the property. A taxpayer who has no capital investment in the mineral deposit, however, does not acquire an economic interest merely by possessing an economic or pecuniary advantage derived from production through a contractual relation.

Two methods of depletion are currently allowable under the Code: (1) the cost depletion method, and (2) the percentage depletion method.¹¹⁰ Under the cost depletion method, the taxpayer deducts that portion of the adjusted basis of the depletable property which is equal to the ratio of units sold from that property during the taxable year to the number of units remaining as of the end of taxable year plus the number of units sold during the taxable year. Thus, the amount recovered under cost depletion may never exceed the taxpayer's basis in the property.

Under the percentage depletion method, a percentage, varying from five percent to 22 percent (generally 15 percent for oil and gas properties), of the taxpayer's gross income from a producing property is allowed as a deduction in each taxable year.¹¹¹ The amount deducted generally may not exceed 50 percent (100 percent in the case of oil and gas properties) of the net income from the oil and gas property in any year (the "net-income limitation").¹¹² Additionally, the percentage depletion deduction for all oil and gas properties may not exceed 65 percent of the taxpayer's overall taxable income for the year (determined before such deduction and adjusted for certain loss carrybacks and trust distributions).¹¹³

The percentage depletion rate for coal and lignite is 10 percent.¹¹⁴ The percentage depletion rate for oil shale is 15 percent.¹¹⁵ In the case of iron ore and coal (including lignite), a corporate preference reduces the amount of percentage depletion calculated by 20 percent of the

¹¹⁰ Secs. 611 - 613.

¹¹¹ Sec. 613A(c). The Code generally limits the percentage depletion method for oil and gas properties to independent producers and royalty owners.

¹¹² Sec. 613(a). For marginal production, discussed *infra*, this limitation is suspended for taxable years beginning after December 31, 1997, and before January 1, 2008, and for taxable years beginning after December 31, 2008 and before January 1, 2010.

¹¹³ Sec. 613A(d)(1).

¹¹⁴ Sec. 613(b)(4).

¹¹⁵ Sec. 613(b)(1)(2)(B).

amount of percentage depletion in excess of the adjusted basis of the property at the close of the taxable year (determined without regard to the depletion deduction for the taxable year).¹¹⁶

Because percentage depletion, unlike cost depletion, is computed without regard to the taxpayer's basis in the depletable property, cumulative depletion deductions may be greater than the amount expended by the taxpayer to acquire or develop the property. A taxpayer is required to determine the depletion deduction for each property under both the percentage depletion method (if the taxpayer is entitled to use this method) and the cost depletion method. If the cost depletion deduction is larger, the taxpayer must utilize that method for the taxable year in question.¹¹⁷

Limitation on oil and gas percentage depletion to independent producers and royalty owners

As stated above, percentage depletion of oil and gas properties generally is not permitted, except for independent producers and royalty owners, certain fixed-price gas contracts, and natural gas from geopressured brine. For purposes of the percentage depletion allowance, an independent producer is any producer that is not a "retailer" or "refiner." A retailer is any person that directly, or through a related person, sells oil or natural gas (or a derivative thereof):

(1) through any retail outlet operated by the taxpayer or related person, or

(2) to any person that is obligated to market or distribute such oil or natural gas (or a derivative thereof) under the name of the taxpayer or the related person, or that has the authority to occupy any retail outlet owned by the taxpayer or a related person.¹¹⁸

Bulk sales of crude oil and natural gas to commercial or industrial users, and bulk sales of aviation fuel to the Department of Defense, are not treated as retail sales. Further, if the combined gross receipts of the taxpayer and all related persons from the retail sale of oil, natural gas, or any product derived therefrom do not exceed \$5 million for the taxable year, the taxpayer will not be treated as a retailer.

A refiner is any person that directly or through a related person engages in the refining of crude oil in excess of an average daily refinery run of 75,000 barrels during the taxable year.¹¹⁹

Percentage depletion for eligible taxpayers is allowed for up to 1,000 barrels of average daily production of domestic crude oil or an equivalent amount of domestic natural gas.¹²⁰ For

¹¹⁶ Sec. 291(a)(2).

¹¹⁷ Sec. 613(a).

¹¹⁸ Sec. 613A(d)(2).

¹¹⁹ Sec. 613A(d)(4).

¹²⁰ Sec. 613A(c).

producers of both oil and natural gas, this limitation applies on a combined basis. All production owned by businesses under common control and members of the same family must be aggregated,¹²¹ each group is then treated as one producer in applying the 1,000-barrel limitation.

In addition to independent producers and royalty owners, certain sales of natural gas under a fixed contract in effect on February 1, 1975, and certain natural gas from geopressured brine, are eligible for percentage depletion, at rates of 22 percent and 10 percent, respectively. These exceptions apply without regard to the 1,000-barrel-per-day limitation and regardless of whether the producer is an independent producer or an integrated oil company.

Before enactment of the Omnibus Budget Reconciliation Act of 1990 (the “1990 Act”), if an interest in a proven oil or gas property was transferred (subject to certain exceptions), the production from such interest did not qualify for percentage depletion. The 1990 Act repealed the limitation on claiming percentage depletion on transferred properties effective for property transfers occurring after October 11, 1990.

Percentage depletion on marginal production

The 1990 Act also created a special percentage depletion provision for oil and gas production from so-called marginal properties held by independent producers or royalty owners.¹²² Under this provision, the statutory percentage depletion rate is increased (from the general rate of 15 percent) by one percent for each whole dollar that the average price of crude oil for the immediately preceding calendar year is less than \$20 per barrel. In no event may the rate of percentage depletion under this provision exceed 25 percent for any taxable year. The increased rate applies for the taxpayer’s taxable year that immediately follows a calendar year for which the average crude oil price falls below the \$20 floor. To illustrate the application of this provision, the average price of a barrel of crude oil for calendar year 1999 was \$15.56. Thus, the percentage depletion rate for production from marginal wells was increased to 19 percent for taxable years beginning in 2000. Since the price of oil currently is above the \$20 floor, there is no increase in the statutory depletion rate for marginal production.

The Code defines the term “marginal production” for this purpose as domestic crude oil or domestic natural gas which is produced during any taxable year from a property which (1) is a stripper well property for the calendar year in which the taxable year begins, or (2) is a property substantially all of the production from which during such calendar year is heavy oil (i.e., oil that has a weighted average gravity of 20 degrees API or less, corrected to 60 degrees Fahrenheit).¹²³ A stripper well property is any oil or gas property that produces a daily average of 15 or fewer

¹²¹ Sec. 613A(c)(8).

¹²² Sec. 613A(c)(6).

¹²³ Sec. 613A(c)(6)(D).

equivalent barrels of oil and gas per producing oil or gas well on such property in the calendar year during which the taxpayer's taxable year begins.¹²⁴

The determination of whether a property qualifies as a stripper well property is made separately for each calendar year. The fact that a property is or is not a stripper well property for one year does not affect the determination of the status of that property for a subsequent year. Further, a taxpayer makes the stripper well property determination for each separate property interest (as defined under section 614) held by the taxpayer during a calendar year. The determination is based on the total amount of production from all producing wells that are treated as part of the same property interest of the taxpayer. A property qualifies as a stripper well property for a calendar year only if the wells on such property were producing during that period at their maximum efficient rate of flow.

If a taxpayer's property consists of a partial interest in one or more oil- or gas-producing wells, the determination of whether the property is a stripper well property or a heavy oil property is made with respect to total production from such wells, including the portion of total production attributable to ownership interests other than the taxpayer's interest. If the property satisfies the requirements of a stripper well property, then the benefits of this provision apply with respect to the taxpayer's allocable share of the production from the property. The deduction is allowed for the taxable year that begins during the calendar year in which the property so qualifies.

The allowance for percentage depletion on production from marginal oil and gas properties is subject to the 1,000-barrel-per-day limitation discussed above. Unless a taxpayer elects otherwise, marginal production is given priority over other production for purposes of utilization of that limitation.

¹²⁴ Sec. 613A(c)(6)(E).

D. Provisions Relating to Refining

1. Tax incentives for refining (secs. 45H, 168, 179B, and 179C)

General rule for depreciating refinery assets (sec. 168)

A taxpayer is allowed to recover, through annual depreciation deductions, the cost of certain property used in a trade or business or for the production of income. The amount of the depreciation deduction allowed with respect to tangible property for a taxable year is determined under the modified accelerated cost recovery system (“MACRS”). The applicable recovery period for assets placed in service under the MACRS is based on the “class life of the property.” Except where provided specifically by statute, the class lives of assets placed in service after 1986 are generally set forth in Revenue Procedure 87-56.¹²⁵ In the Revenue Procedure, petroleum refining assets are assigned a 10-year recovery period and a class life of 16 years. Petroleum refining assets are assets used for distillation, fractionation, and catalytic cracking of crude petroleum into gasoline and its other components.

Temporary election to expense 50 percent of qualified property used in refining liquid fuels (sec. 179C)

Taxpayers may elect to expense 50 percent of the cost of any qualified property used for processing liquid fuel from crude oil or qualified fuels (as defined in section 45K(c)¹²⁶ of the Code). The remaining 50 percent is recovered under the otherwise applicable rules. Qualified refinery property includes assets located in the United States that are used in the refining of liquid fuels: (1) with respect to the construction of which a binding construction contract has been entered into before January 1, 2010;¹²⁷ (2) which are placed in service before January 1, 2014; (3) which increase the capacity of an existing refinery by at least five percent or increase the percentage of total throughput attributable to qualified fuels such that it equals or exceeds 25 percent; and (4) which meet all applicable environmental laws in effect when the property is placed in service.

Special expensing rule for capital costs incurred by small refiners to comply with EPA sulfur regulations (sec. 179B)

Under present law, a small business refiner may immediately deduct as an expense 75 percent of the costs paid or incurred for purposes of complying with the Highway Diesel Fuel

¹²⁵ 1987-2 C.B. 674 (as clarified and modified by Rev. Proc. 88-22, 1988-1 C.B. 785).

¹²⁶ Under Code section 45K(c), qualified fuels are (1) oil produced from shale and tar sands; (2) gas produced from geopressured brine, Devonian shale, coal seams, or a tight formation, or biomass; and (3) liquid, gaseous, or solid synthetic fuels produced from coal (including lignite).

¹²⁷ This requirement also may be met by placing the property in service before January 1, 2010 or, in the case of self-constructed property, by beginning construction after June 14, 2005 and before January 1, 2008.

Sulfur Control requirement of the Environmental Protection Agency (“EPA”). A cooperative that qualifies as a small business refiner may elect to pass this deduction through to its owners.

Costs qualifying for the deduction are those costs paid or incurred with respect to any facility of a small business refiner during the period beginning on January 1, 2003 and ending on the earlier of the date that is one year after the date on which the taxpayer must comply with the applicable EPA regulations or December 31, 2009. A small business refiner is a crude oil refiner that has no more than 1,500 individuals engaged in refinery operations on any given day and that had an average daily domestic refinery run or average retained production of not more than 205,000 barrels for the one-year period ending on December 31, 2002.

Credit for small refiners for production of diesel fuel in compliance with EPA sulfur regulations (sec. 45H)

Under present law, a small business refiner (as defined above) may claim a credit of five cents per gallon for each gallon of low sulfur diesel fuel produced during the taxable year. “Low sulfur diesel fuel” is diesel fuel with a sulfur content of 15 parts per million or less.

The total production credit claimed by the taxpayer is limited to 25 percent of the qualified costs incurred to come into compliance with the EPA diesel fuel requirements. The percentage limitation phases down pro rata for refiners that had runs in 2002 exceeding 155,000 barrels but less than 205,000 barrels.

Costs qualifying for the credit are those costs paid or incurred with respect to any facility of a small business refiner during the period beginning on January 1, 2003 and ending on the earlier of the date that is one year after the date on which the taxpayer must comply with the applicable EPA regulations or December 31, 2009.

2. Credit for producing coke or coke gas (sec. 45K)

Coke and coke gas produced in the United States at qualified facilities and sold to unrelated parties are eligible for an income tax credit equal to \$3 (generally adjusted for inflation)¹²⁸ per Btu oil barrel equivalent (the “coke credit”). The credit is available for coke or coke gas produced during a four-year period beginning on the later of January 1, 2006, or the date the qualified facility was placed in service. For purposes of the coke credit, qualified facilities are facilities placed in service before January 1, 1993, or after June 30, 1998, and before January 1, 2010. Qualified facilities do not include facilities that produce petroleum-based coke or coke gas. The amount of credit-eligible coke produced at any one facility may not exceed an average barrel-of-oil equivalent of 4,000 barrels per day. The coke credit is part of the general business credit.

¹²⁸ The inflation adjustment is calculated using 2004 as the base year.

E. Provisions Relating to Energy Transportation or Transmission

1. Cost recovery of certain energy transportation and transmission property (sec. 168(e)(3))

In general

A taxpayer is allowed to recover, through annual depreciation deductions, the cost of certain property used in a trade or business or for the production of income. The amount of the depreciation deduction allowed with respect to tangible property for a taxable year is determined under the modified accelerated cost recovery system (“MACRS”). Under MACRS, different types of property are generally assigned applicable recovery periods and depreciation methods. The recovery periods applicable to most tangible personal property (generally tangible property other than residential rental property and nonresidential real property) range from three to 25 years. The depreciation methods generally applicable to tangible personal property are the 200-percent and 150-percent declining balance methods, switching to the straight-line method for the taxable year in which the depreciation deduction would be maximized.¹²⁹ In general, the recovery periods applicable to real property are 39 years for non-residential real property and 27.5 years for residential rental property. The depreciation method for real property is the straight-line method.

Under MACRS, the full basis of depreciable property is recovered by the taxpayer over the applicable recovery period; there is no need to estimate salvage value. Furthermore, under MACRS, the applicable recovery period need not (and typically does not) correspond to the actual economic life of the asset subject to depreciation. In general, however, MACRS generally provides for longer recovery periods for longer lived assets.

Alaska natural gas pipeline (sec. 168(e)(3)(C)(iii))

The Code provides a statutory seven year recovery period and a class life of 22 years for any Alaska natural gas pipeline. The term “Alaska natural gas pipeline” is defined as any natural gas pipeline system (including the pipe, trunk lines, related equipment, and appurtenances used to carry natural gas, but not any gas processing plant) located in the State of Alaska that has a capacity of more than 500 billion Btu of natural gas per day and is placed in service after December 31, 2013.¹³⁰ A taxpayer who places an otherwise qualifying system in service before January 1, 2014 may elect to treat the system as placed in service on January 1, 2014, thus qualifying for the seven-year recovery period. Absent such an election, the system is subject to the prior law recovery period of 15 years.

¹²⁹ For certain property, including tangible property used predominantly outside the United States, tax-exempt use property, tax-exempt bond-financed property, and certain other property, the MACRS “alternative depreciation system” of section 168(g) applies, generally increasing recovery periods and requiring straight-line depreciation.

¹³⁰ Sec. 168(i)(16).

Natural gas distribution lines (sec. 168(e)(3)(E)(viii))

The Code provides a statutory 15-year recovery period and a class life of 35 years for natural gas distribution lines. This provision is effective for property, the original use of which begins with the taxpayer after April 11, 2005, and which is placed in service after April 11, 2005 and before January 1, 2011. The provision does not apply to property subject to a binding contract on or before April 11, 2005.¹³¹

Natural gas gathering lines (sec. 168(e)(3)(C)(iv))

The Code provides a statutory seven-year recovery period and a class life of 14 years for natural gas gathering lines. In addition, no adjustment will be made to the allowable amount of depreciation with respect to this property for purposes of computing a taxpayer's alternative minimum taxable income. A natural gas gathering line is defined to include any pipe, equipment, and appurtenance that is (1) determined to be a gathering line by the Federal Energy Regulatory Commission, or (2) used to deliver natural gas from the wellhead or a common point to the point at which such gas first reaches (a) a gas processing plant, (b) an interconnection with an interstate transmission line, (c) an interconnection with an intrastate transmission line, or (d) a direct interconnection with a local distribution company, a gas storage facility, or an industrial consumer.¹³²

Electricity Transmission Property (sec. 168(e)(3)(E)(vii))

Generally, assets used in the transmission and distribution of electricity for sale and related land improvements are assigned a 20-year recovery period and a class life of 30 years. However, the Code provides a statutory 15-year recovery period and a class life of 30 years for certain assets used in the transmission of electricity for sale and related land improvements. Such assets include section 1245 property¹³³ used in the transmission at 69 or more kilovolts of electricity for sale, the original use of which commences with the taxpayer after April 11, 2005.

¹³¹ In the case of self-constructed property, the provision does not apply to property under construction on or before April 11, 2005.

¹³² Sec. 168(i)(17).

¹³³ Generally, sec. 1245 property includes personal property. For a complete definition, *see* sec. 1245(a)(3).

2. Five-Year carryback of net operating losses for certain electric utility companies (sec. 172(b)(1)(I))

In general

A net operating loss (“NOL”) is, generally, the amount by which a taxpayer’s allowable deductions exceed the taxpayer’s gross income. A carryback of an NOL generally results in the refund of Federal income tax for the carryback year. A carryover of an NOL reduces Federal income tax for the carryover year. In general, an NOL may be carried back two years and carried over 20 years to offset taxable income in such years.¹³⁴ Under present-law ordering rules, NOLs generally are first applied to the earliest of the taxable years to which the loss may be carried.

Certain electric utility company NOLs

The Code provides an election for certain electric utility companies to extend the carryback period to five years for a portion of NOLs arising in 2003, 2004, and 2005 (“loss years”). The election may be made during any taxable year ending after December 31, 2005, and before January 1, 2009 (“election years”). An electing taxpayer must specify to which loss year the election applies.

The portion of the loss year NOL to which the election may apply is limited to 20 percent of the amount of the taxpayer’s qualifying investment in the taxable year prior to the year in which the election is made (the “qualifying investment limitation”), with any remaining portion of the loss year NOL subject to the general NOL carryover rules. Only one election may be made in any election year, and elections may not be made for more than one election year beginning in the same calendar year. Thus, for example, a taxpayer with two short taxable years beginning in calendar year 2006 is eligible to make an election under this provision in only one of those two short taxable years. Once an election has been made with respect to a loss year, no subsequent election is available with respect to that loss year.

For purposes of calculating interest on overpayments, any overpayment resulting from a five-year NOL carryback elected under this provision is deemed not to have been made prior to the filing date for the taxable year in which the election is made. The statute of limitations for refund claims, and that for assessment of deficiencies, are also extended.

An election under this provision is made in such manner as the Secretary may prescribe. However, Congress expects that the filing of a refund claim will be considered sufficient for

¹³⁴ Different rules apply with respect to NOLs arising in certain circumstances. For example, a three-year carryback applies with respect to NOLs (1) arising from casualty or theft losses of individuals, or (2) attributable to Presidentially declared disasters for taxpayers engaged in a farming business or a small business. A five-year carryback period applies to NOLs from a farming loss (regardless of whether the loss was incurred in a Presidentially declared disaster area). Special rules also apply to real estate investment trusts (no carryback), specified liability losses (10-year carryback), and excess interest losses (no carryback to any year preceding a corporate equity reduction transaction).

making the election, provided that the taxpayer attaches to the refund claim a statement specifying the election year, the loss year, and the amount of qualifying investment in electric transmission property and pollution control facilities in the preceding taxable year.

Under the provision, an investment in electric transmission property qualifies if it is a capital expenditure made by the taxpayer which is attributable to electric transmission property used by the taxpayer in the transmission at 69 or more kilovolts of electricity for sale. An investment in pollution control equipment qualifies if it is a capital expenditure, made by an electric utility company (as defined in the Public Utility Holding Company Act as in effect on the day before the date of enactment of the provision), which is attributable to a facility which will qualify as a certified pollution control facility, generally as defined under section 169(d)(1) but without regard to the requirements therein that the facility be new or that it be used in connection with a plant or other property in operation before January 1, 1976.

There is no requirement that the transmission property or pollution control facilities be placed in service in the year in which the capital expenditures are incurred. However, it is intended that qualifying investment under the provision includes only capital expenditures to which the taxpayer is committed and with respect to property which the taxpayer intends to ultimately place in service in the taxpayer's trade or business. Under the provision, capital expenditures which, at the taxpayer's option, are refundable or subject to material modification in a manner which would not meet the requirements of the provision, may not be taken into account. For example, if a taxpayer makes a cash deposit with respect to a contract for the purchase of electric transmission property, and the contract contains an option (or there is otherwise an understanding) under which the taxpayer may subsequently apply the deposit to the purchase of equipment other than electric transmission property, the deposit is not included in the taxpayer's qualifying investment. This rule is intended as an anti-abuse rule and should be interpreted to prevent a taxpayer from taking into account capital expenditures to which the taxpayer is not permanently committed.

3. Deferral of gains from the sale of electric transmission property (sec. 451(i))

Generally, a taxpayer recognizes gain to the extent the sales price (and any other consideration received) exceeds the seller's basis in the property. The recognized gain is subject to current income tax unless the gain is deferred or not recognized under a special tax provision. With regard to the disposition of certain electric transmission property, taxpayers may elect to recognize gain from qualified electric transmission transactions ratably over an eight-year period if the amount realized from such sale is used to purchase exempt utility property within four years after the close of the taxable year in which the transaction takes place.¹³⁵ If the amount realized exceeds the amount used to purchase reinvestment property, any realized gain shall be recognized to the extent of such excess in the year of the qualifying electric transmission transaction, with any remaining realized gain recognized ratably over the eight-year period.

¹³⁵ Sec. 451(i).

A qualifying electric transmission transaction is the sale or other disposition of property used by the taxpayer in the trade or business of providing electric transmission services, or an ownership interest in such an entity, to an independent transmission company prior to January 1, 2010. In general, an independent transmission company is defined as: (1) an independent transmission provider¹³⁶ approved by the Federal Energy Regulatory Commission (“FERC”); (2) a person (i) who the FERC determines under section 203 of the Federal Power Act (or by declaratory order) is not a “market participant” and (ii) whose transmission facilities are placed under the operational control of a FERC-approved independent transmission provider before the close of the period specified in such authorization, but not later than December 31, 2007; or (3) in the case of facilities subject to the jurisdiction of the Public Utility Commission of Texas, (i) a person which is approved by that Commission as consistent with Texas State law regarding an independent transmission organization, or (ii) a political subdivision, or affiliate thereof, whose transmission facilities are under the operational control of an organization described in (i).

Exempt utility property is defined as: (1) property used in the trade or business of generating, transmitting, distributing, or selling electricity or producing, transmitting, distributing, or selling natural gas, or (2) stock in a controlled corporation whose principal trade or business consists of the activities described in (1).

If the taxpayer is a member of an affiliated group of corporations filing a consolidated return, the reinvestment property may be purchased by any member of the affiliated group (in lieu of the taxpayer).

¹³⁶ For example, a regional transmission organization, an independent system operator, or an independent transmission company.

F. Provisions Relating to Coal and Nuclear Energy

1. Credit for the production of refined coal (sec. 45)

In general

A credit is available for refined coal. In general, refined coal is a fuel produced from coal that is (1) used to produce steam or (2) used to produce steel industry fuel.

Refined coal used to produce steam

An income tax credit is allowed for the production at qualified facilities of certain refined coal sold to an unrelated person. The amount of the refined coal credit is \$4.375 per ton (indexed for inflation after 1992 and equaling \$6.061 per ton for 2008). A taxpayer may generally claim the credit during the 10-year period commencing with the date the qualified facility is placed in service.

A qualifying refined coal facility is a facility producing refined coal that is placed in service after October 22, 2004, and before January 1, 2010. Refined coal is a qualifying liquid, gaseous, or solid synthetic fuel produced from coal (including lignite) or high-carbon fly ash, including such fuel used as a feedstock. A qualifying fuel is a fuel that, when burned, emits 20 percent less nitrogen oxides and either sulfur dioxide or mercury than the burning of feedstock coal or comparable coal predominantly available in the marketplace as of January 1, 2003, but only if the fuel sells at prices at least 50 percent greater than the prices of the feedstock coal or comparable coal. In addition, to be qualified refined coal, the taxpayer must sell the fuel with the reasonable expectation that it will be used for the primary purpose of producing steam.

The refined coal credit is reduced over an \$8.75 phase-out range as the reference price of the fuel used as feedstock for the refined coal exceeds an amount equal to 1.7 times the reference price for such fuel in 2002 (adjusted for inflation). The amount of the credit a taxpayer may claim is reduced by reason of grants, tax-exempt bonds, subsidized energy financing, and other credits, but the reduction cannot exceed 50 percent of the otherwise allowable credit.

The credit is a component of the general business credit,¹³⁷ allowing excess credits to be carried back one year and forward up to 20 years. The credit is also subject to the alternative minimum tax.

Refined coal facilities used to produce steam that are placed in service after 2008

For refined coal facilities placed in service after 2008, the requirement that the qualified refined coal fuel sell at a price at least 50 percent greater than the price of the feedstock coal does not apply. However, to be credit-eligible, refined coal produced by such facilities must reduce by 40 percent (not 20 percent) the amount by which refined coal must reduce, when burned,

¹³⁷ Sec. 38(b)(8).

emissions of either sulfur dioxide or mercury compared to the emissions released by the feedstock coal or comparable coal predominantly available in the marketplace as of January 1, 2003.

Refined coal that is steel industry fuel

Each barrel-of-oil equivalent (defined as 5.8 million British thermal units) of steel industry fuel produced at a qualified facility during the credit period receives a \$2 credit (adjusted for inflation using 1992 as the base year and equal to \$2.77 for 2008). A qualified facility is any facility capable of producing steel industry fuel (or any modification to a facility making it so capable) that is placed in service before January 1, 2010. For facilities capable of producing steel industry fuel on or before October 1, 2008, the credit is available for fuel produced and sold on or after such date and before January 1, 2010. For facilities placed in service or modified to produce steel industry fuel after October 1, 2008, the credit period begins on the placed-in-service or modification date and ends one year after such date or December 31, 2009, whichever is later.

Steel industry fuel is defined as a fuel produced through a process of liquefying coal waste sludge, distributing the liquefied product on coal, and using the resulting mixture as a feedstock for the manufacture of coke. Coal waste sludge includes tar decanter sludge and related byproducts of the coking process.

2. Advanced nuclear power production credit (sec. 45J)

Taxpayers producing electricity at a qualifying advanced nuclear power facility may claim a credit equal to 1.8 cents per kilowatt-hour of electricity produced for the eight-year period starting when the facility is placed in service.¹³⁸ The aggregate amount of credit that a taxpayer may claim in any year during the eight-year period is subject to limitation based on allocated capacity and an annual limitation as described below.

A qualifying advanced nuclear facility is an advanced nuclear facility for which the taxpayer has received an allocation of megawatt capacity from the Secretary and is placed in service before January 1, 2021. The taxpayer may only claim credit for production of electricity equal to the ratio of the allocated capacity that the taxpayer receives from the Secretary to the rated nameplate capacity of the taxpayer's facility. For example, if the taxpayer receives an allocation of 750 megawatts of capacity from the Secretary and the taxpayer's facility has a rated nameplate capacity of 1,000 megawatts, then the taxpayer may claim three-quarters of the otherwise allowable credit, or 1.35 cents per kilowatt-hour, for each kilowatt-hour of electricity produced at the facility (subject to the annual limitation described below). The Secretary may allocate a total of up to 6,000 megawatts of capacity.

¹³⁸ The 1.8-cents credit amount is reduced, but not below zero, if the annual average contract price per kilowatt-hour of electricity generated from advanced nuclear power facilities in the preceding year exceeds eight cents per kilowatt-hour. The eight-cent price comparison level is indexed for inflation after 1992.

A taxpayer operating a qualified facility may claim no more than \$125 million in tax credits per 1,000 megawatts of allocated capacity in any one year of the eight-year credit period. If the taxpayer operates a 1,350 megawatt rated nameplate capacity system and has received an allocation from the Secretary for 1,350 megawatts of capacity eligible for the credit, the taxpayer's annual limitation on credits that may be claimed is equal to 1.35 times \$125 million, or \$168.75 million. If the taxpayer operates a facility with a nameplate rated capacity of 1,350 megawatts, but has received an allocation from the Secretary for 750 megawatts of credit eligible capacity, then the two limitations apply such that the taxpayer may claim a credit equal to 1 cent per kilowatt-hour of electricity produced (as described above) subject to an annual credit limitation of \$93.75 million in credits (three-quarters of \$125 million).

An advanced nuclear facility is any nuclear facility for the production of electricity, the reactor design for which was approved after 1993 by the Nuclear Regulatory Commission. For this purpose, a qualifying advanced nuclear facility does not include any facility for which a substantially similar design for a facility of comparable capacity was approved before 1994.

In addition, the credit allowable to the taxpayer is reduced by reason of grants, tax-exempt bonds, subsidized energy financing, and other credits, but such reduction cannot exceed 50 percent of the otherwise allowable credit. The credit is treated as part of the general business credit.

3. Credit for carbon dioxide sequestration (sec. 45Q)

A credit of \$10 per metric ton is available for qualified carbon dioxide that is captured by the taxpayer at a qualified facility, used by such taxpayer as a tertiary injectant (including carbon dioxide augmented waterflooding and immiscible carbon dioxide displacement) in a qualified enhanced oil or natural gas recovery project and disposed of by such taxpayer in secure geological storage.¹³⁹ In addition, a credit of \$20 per metric ton is available for qualified carbon dioxide captured by a taxpayer at a qualified facility and disposed of by such taxpayer in secure geological storage without being used as a tertiary injectant. Both credit amounts are adjusted for inflation after 2009.

Secure geological storage includes storage at deep saline formations, oil and gas reservoirs, and unminable coal seams. The Secretary, in consultation with the Administrator of the Environmental Protection Agency the Secretary of Energy, and the Secretary of the Interior, is required to establish regulations for determining adequate security measures for the secure geological storage of carbon dioxide such that the carbon dioxide does not escape into the atmosphere.

Qualified carbon dioxide is defined as carbon dioxide captured from an industrial source that (1) would otherwise be released into the atmosphere as an industrial emission of greenhouse gas, and (2) is measured at the source of capture and verified at the point or points of injection. Qualified carbon dioxide includes the initial deposit of captured carbon dioxide used as a tertiary injectant but does not include carbon dioxide that is recaptured, recycled, and re-injected as part

¹³⁹ Sec. 45Q.

of an enhanced oil or natural gas recovery project process. A qualified enhanced oil or natural gas recovery project is a project that would otherwise meet the definition of an enhanced oil recovery project under section 43, if natural gas projects were included within that definition.

A qualified facility means any industrial facility (1) which is owned by the taxpayer, (2) at which carbon capture equipment is placed in service, and (3) which captures not less than 500,000 metric tons of carbon dioxide during the taxable year. The credit applies only with respect to qualified carbon dioxide captured and sequestered or injected in the United States¹⁴⁰ or one of its possessions.¹⁴¹

Except as provided in regulations, credits are attributable to the person that captures and physically or contractually ensures the disposal, or use as a tertiary injectant, of the qualified carbon dioxide. Credits are subject to recapture, as provided by regulation, with respect to any qualified carbon dioxide that ceases to be recaptured, disposed of, or used as a tertiary injectant in a manner consistent with the rules of the provision.

The credit is part of the general business credit. The credit sunsets at the end of the calendar year in which the Secretary, in consultation with the Administrator of the Environmental Protection Agency, certifies that 75 million metric tons of qualified carbon dioxide have been captured and sequestered.

4. Advanced coal project credit (sec. 48A)

In general

An investment tax credit is available for power generation projects that use integrated gasification combined cycle (“IGCC”) or other advanced coal-based electricity generation technologies.

First round of credit allocations

For the first round of credit allocations, the credit amount is 20 percent for investments in qualifying IGCC projects and 15 percent for investments in qualifying projects that use other advanced coal-based electricity generation technologies.

To qualify, an advanced coal project must be located in the United States and use an advanced coal-based generation technology to power a new electric generation unit or to retrofit or repower an existing unit. Generally, an electric generation unit using an advanced coal-based technology must be designed to achieve a 99-percent reduction in sulfur dioxide and a 90-percent reduction in mercury, as well as to limit emissions of nitrous oxide and particulate matter.¹⁴²

¹⁴⁰ Sec. 638(1).

¹⁴¹ Sec. 638(2).

¹⁴² For advanced coal project certification applications submitted after October 2, 2006, an electric generation unit using advanced coal-based generation technology designed to use subbituminous

The fuel input for a qualifying project, when completed, must use at least 75 percent coal. The project, consisting of one or more electric generation units at one site, must have a nameplate generating capacity of at least 400 megawatts, and the taxpayer must provide evidence that a majority of the output of the project is reasonably expected to be acquired or utilized.

Credits are available only for projects certified by the Secretary of Treasury, in consultation with the Secretary of Energy. Certifications are issued using a competitive bidding process. The Secretary of Treasury must establish a certification program no later than 180 days after August 8, 2005,¹⁴³ and each project application must be submitted during the three-year period beginning on the date such certification program is established. An applicant for certification has two years from the date the Secretary accepts the application to provide the Secretary with evidence that the requirements for certification have been met. Upon certification, the applicant has five years from the date of issuance of the certification to place the project in service.

The Secretary of Treasury may allocate \$800 million of credits to IGCC projects and \$500 million to projects using other advanced coal-based electricity generation technologies. Qualified projects must be economically feasible and use the appropriate clean coal technologies. With respect to IGCC projects, credit-eligible investments include only investments in property associated with the gasification of coal, including any coal handling and gas separation equipment. Thus, investments in equipment that could operate by drawing fuel directly from a natural gas pipeline do not qualify for the credit.

In determining which projects to certify, the Secretary must allocate power generation capacity in relatively equal amounts to projects that use bituminous coal, subbituminous coal, and lignite as primary feedstock. In addition, the Secretary must give high priority to projects which include greenhouse gas capture capability, increased by-product utilization, and other benefits.

Second round of credit allocations

Under the second round of credit allocations, the credit rate is increased to 30 percent for new IGCC and other advanced coal projects and the Secretary is permitted to allocate an additional \$1.25 billion of credits to qualifying projects.¹⁴⁴

coal can meet the performance requirement relating to the removal of sulfur dioxide if it is designed either to remove 99 percent of the sulfur dioxide or to achieve an emission limit of 0.04 pounds of sulfur dioxide per million British thermal units on a 30-day average.

¹⁴³ The Secretary issued guidance establishing the certification program on February 21, 2006 (IRS Notice 2006-24).

¹⁴⁴ The second round of credit allocations were authorized on October 3, 2008, the date of enactment of the Energy Improvement and Extension Act of 2008 (Pub. Law 110-343, Div. B).

Under the second round of credit allocations, qualifying projects must include equipment which separates and sequesters at least 65 percent of the project's total carbon dioxide emissions. This percentage increases to 70 percent if the credits are later reallocated by the Secretary. The Secretary is required to recapture the benefit of any allocated credit if a project fails to attain or maintain these carbon dioxide separation and sequestration requirements.

In selecting projects, the Secretary must give high priority to applicants who have a research partnership with an eligible educational institution. In addition, the Secretary must give the highest priority to projects with the greatest separation and sequestration percentage of total carbon dioxide emissions. The Secretary must also disclose which projects receive credit allocations, including the identity of the taxpayer and the amount of the credit awarded.

5. Gasification investment credit (sec. 48B)

In general

An investment credit is available for certain qualifying gasification projects. Only property which is part of a qualifying gasification project and necessary for the gasification technology of such project is eligible for the gasification credit.

First round of credit allocations

Under the first round of credit allocations, a 20-percent investment tax credit is available for investments in certain qualifying gasification projects. Qualified gasification projects convert coal, petroleum residue, biomass, or other materials recovered for their energy or feedstock value into a synthesis gas composed primarily of carbon monoxide and hydrogen for direct use or subsequent chemical or physical conversion. Qualified projects must be carried out by an eligible entity, defined as any person whose application for certification is principally intended for use in a domestic project which employs domestic gasification applications related to (1) chemicals, (2) fertilizers, (3) glass, (4) steel, (5) petroleum residues, (6) forest products, and (7) agriculture, including feedlots and dairy operations.

Credits are available only for projects certified by the Secretary of Treasury, in consultation with the Secretary of Energy. Certifications are issued using a competitive bidding process. The Secretary of Treasury must establish a certification program no later than 180 days after August 8, 2005,¹⁴⁵ and each project application must be submitted during the 3-year period beginning on the date such certification program is established. The Secretary of Treasury may not allocate more than \$350 million in credits. In addition, the Secretary may certify a maximum of \$650 million in qualified investment as eligible for credit with respect to any single project.

¹⁴⁵ The Secretary issued guidance establishing the certification program on February 21, 2006 (IRS Notice 2006-25).

Second round of credit allocations

Under the second round of credit allocations, the gasification project credit rate is increased to 30 percent and the Secretary is authorized to allocate an additional \$250 million of credits to qualified projects that separate and sequester at least 75 percent of total carbon dioxide emissions.¹⁴⁶ For this round, the definition of credit-eligible entities includes entities whose gasification projects are related to the production of transportation grade liquid fuels. The Secretary is required to recapture the benefit of any allocated credit if a project fails to attain or maintain these carbon dioxide separation and sequestration requirements.

In selecting projects, the Secretary must give high priority to applicants who have a research partnership with an eligible educational institution. In addition, the Secretary must give the highest priority to projects with the greatest separation and sequestration percentage of total carbon dioxide emissions. The Secretary must also disclose which projects receive credit allocations, including the identity of the taxpayer and the amount of the credit awarded.

6. Pollution Control Facilities (sec. 169)

In general, a taxpayer may elect to recover the cost of any certified pollution control facility over a period of 60 months.¹⁴⁷ A certified pollution control facility is defined as a new, identifiable treatment facility which (1) is used in connection with a plant in operation before January 1, 1976, to abate or control water or atmospheric pollution or contamination by removing, altering, disposing, storing, or preventing the creation or emission of pollutants, contaminants, wastes or heat; and (2) does not lead to a significant increase in output or capacity, a significant extension of useful life, a significant reduction in total operating costs for such plant or other property (or any unit thereof), or a significant alteration in the nature of a manufacturing production process or facility. Certification is required by appropriate State and Federal authorities that the facility complies with appropriate standards.

For a pollution control facility with a useful life greater than 15 years, only the portion of the basis attributable to the first 15 years is eligible to be amortized over a 60-month period.¹⁴⁸ In addition, a corporate taxpayer must reduce the amount of basis otherwise eligible for the 60-month recovery by 20 percent.¹⁴⁹ The amount of basis not eligible for 60-month amortization is depreciable under the regular tax rules for depreciation.

¹⁴⁶ The second round of credit allocations were authorized on October 3, 2008, the date of enactment of the Energy Improvement and Extension Act of 2008 (Pub. Law 110-343, Div. B).

¹⁴⁷ Sec. 169.

¹⁴⁸ The amount attributable to the first 15 years is equal to an amount which bears the same ratio to the portion of the adjusted basis of the facility, which would be eligible for amortization but for the application of this rule, as 15 bears to the number of years of useful life of the facility.

¹⁴⁹ Sec. 291(a)(4).

A certified air pollution control facility (but not a water pollution control facility) used in connection with an electric generation plant which is primarily coal fired will be eligible for 84-month amortization if the associated plant or other property was not in operation prior to January 1, 1976.¹⁵⁰ The 60-month amortization period remains in effect for any certified air pollution control facility used in connection with an electric generation plant which is primarily coal fired and which was in operation prior to January 1, 1976.

7. Special rules for nuclear decommissioning costs (sec. 468A)

In general

Special rules dealing with nuclear decommissioning reserve funds were enacted in the Deficit Reduction Act of 1984 (“1984 Act”), when tax issues regarding the time value of money were addressed generally. Under general tax accounting rules, a deduction for accrual basis taxpayers is deferred until there is economic performance for the item for which the deduction is claimed. However, the 1984 Act contains an exception under which a taxpayer responsible for nuclear power plant decommissioning may elect to deduct contributions made to a qualified nuclear decommissioning fund for future decommissioning costs. Taxpayers who do not elect this provision are subject to general tax accounting rules.

Qualified nuclear decommissioning fund

A qualified nuclear decommissioning fund (a “qualified fund”) is a segregated fund established by a taxpayer that is used exclusively for the payment of decommissioning costs, taxes on fund income, management costs of the fund, and for making investments. The income of the fund is taxed at a reduced rate of 20 percent.

At the election of the taxpayer, a deduction is allowed for any taxable year in the amount of payments made by the taxpayer to a qualified fund. Amounts withdrawn by the taxpayer to pay for decommissioning costs are included in the taxpayer’s income, but the taxpayer also is entitled to a deduction for decommissioning costs as economic performance for such costs occurs.

Accumulations in a qualified fund are limited to the amounts sufficient to cover the present value of a nuclear power plant’s estimated decommissioning costs. In order to prevent accumulations of funds over the useful life of a nuclear power plant in excess of those required to pay decommissioning costs of such nuclear power plant and to ensure that contributions to a qualified fund are not deducted more rapidly than level funding (taking into account an appropriate discount rate), taxpayers must obtain a ruling from the IRS to establish the maximum annual contribution that may be made to a qualified fund (the “ruling amount”). In certain instances (e.g., change in estimates), a taxpayer is required to obtain a new ruling amount to reflect updated information.

¹⁵⁰ This provision was added by the Energy Policy Act of 2005 (Pub. L. No. 109-58) and is generally applicable to property that is constructed or acquired after April 11, 2005.

A qualified fund may be transferred in connection with the sale, exchange or other transfer of the nuclear power plant to which it relates. If the transferee is a regulated public utility and meets certain other requirements, the transfer will be treated as a nontaxable transaction. No gain or loss will be recognized on the transfer of the qualified fund and the transferee will take the transferor's basis in the fund. The transferee is generally required to obtain a new ruling amount from the IRS.

G. Provisions Relating to General Energy-Related Projects and Research

1. Energy research credit (sec. 41)

General rule

A 20-percent credit is available for a taxpayer's expenditures on qualified research undertaken by an energy research consortium. Generally, an energy research consortium is an organization (not including a private foundation) that is either (1) a tax-exempt section 501(c)(3) corporation organized and operated primarily to conduct energy research or (2) any other organization organized and operated primarily to conduct energy research in the public interest (within the meaning of section 501(c)(3)). In addition, an energy research consortium must have received payments or contributions for energy research from at least 5 unrelated persons per year and no single person can have paid or contributed a majority of the funds used for such research.

The energy research credit expires for amounts paid or incurred after December 31, 2009.¹⁵¹

Qualified research

Qualified research expenses eligible for the research tax credit consist of: (1) in-house expenses of the taxpayer for wages and supplies attributable to qualified research; (2) certain time-sharing costs for computer use in qualified research; and (3) 65 percent of amounts paid or incurred by the taxpayer to certain other persons for qualified research conducted on the taxpayer's behalf (so-called contract research expenses).¹⁵² Notwithstanding the limitation for contract research expenses, qualified research expenses include 100 percent of amounts paid or incurred by the taxpayer to an eligible small business, university, or Federal laboratory for qualified energy research.

To be eligible for the credit, the research not only has to satisfy the requirements of present-law section 174 (described below) but also must be undertaken for the purpose of discovering information that is technological in nature, the application of which is intended to be useful in the development of a new or improved business component of the taxpayer, and substantially all of the activities of which constitute elements of a process of experimentation for functional aspects, performance, reliability, or quality of a business component. Research does not qualify for the credit if substantially all of the activities relate to style, taste, cosmetic, or

¹⁵¹ Sec. 41(h).

¹⁵² Under a special rule, 75 percent of amounts paid to a research consortium for qualified research are treated as qualified research expenses eligible for the research credit (rather than 65 percent under the general rule under section 41(b)(3) governing contract research expenses) if (1) such research consortium is a tax-exempt organization that is described in section 501(c)(3) (other than a private foundation) or section 501(c)(6) and is organized and operated primarily to conduct scientific research, and (2) such qualified research is conducted by the consortium on behalf of the taxpayer and one or more persons not related to the taxpayer. Sec. 41(b)(3)(C).

seasonal design factors.¹⁵³ In addition, research does not qualify for the credit: (1) if conducted after the beginning of commercial production of the business component; (2) if related to the adaptation of an existing business component to a particular customer's requirements; (3) if related to the duplication of an existing business component from a physical examination of the component itself or certain other information; or (4) if related to certain efficiency surveys, management function or technique, market research, market testing, or market development, routine data collection or routine quality control.¹⁵⁴ Research does not qualify for the credit if it is conducted outside the United States, Puerto Rico, or any U.S. possession.

Relation to deduction

Under section 174, taxpayers may elect to deduct currently the amount of certain research or experimental expenditures paid or incurred in connection with a trade or business, notwithstanding the general rule that business expenses to develop or create an asset that has a useful life extending beyond the current year must be capitalized.¹⁵⁵ However, deductions allowed to a taxpayer under section 174 (or any other section) are reduced by an amount equal to 100 percent of the taxpayer's research tax credit determined for the taxable year.¹⁵⁶ Taxpayers may alternatively elect to claim a reduced research tax credit amount under section 41 in lieu of reducing deductions otherwise allowed.¹⁵⁷

2. Credit for investment in advanced energy property (sec. 48C)

A 30-percent credit for investment in qualified property used in a qualified advanced energy manufacturing project. A qualified advanced energy project is a project that re-equips, expands, or establishes a manufacturing facility for the production: (1) property designed to be used to produce energy from the sun, wind, or geothermal deposits (within the meaning of section 613(e)(2)), or other renewable resources; (2) fuel cells, microturbines, or an energy storage system for use with electric or hybrid-electric motor vehicles; (3) electric grids to support the transmission of intermittent sources of renewable energy, including storage of such energy; (4) property designed to capture and sequester carbon dioxide; (5) property designed to refine or blend renewable fuels (but not fossil fuels) or to produce energy conservation technologies (including energy-conserving lighting technologies and smart grid technologies); (6) new qualified plug-in electric drive motor vehicles, qualified plug-in electric vehicles, or components which are designed specifically for use with such vehicles, including electric motors, generators, and power control units, or (7) other advanced energy property designed to reduce greenhouse gas emissions as may be determined by the Secretary. Qualified property does not include

¹⁵³ Sec. 41(d)(3).

¹⁵⁴ Sec. 41(d)(4).

¹⁵⁵ Taxpayers may elect 10-year amortization of certain research expenditures allowable as a deduction under section 174(a). Secs. 174(f)(2) and 59(e).

¹⁵⁶ Sec. 280C(c).

¹⁵⁷ Sec. 280C(c)(3).

property designed to manufacture equipment for use in the refining or blending of any transportation fuel other than renewable fuels.

Qualified property must be depreciable (or amortizable) property used in a qualified advanced energy project. Only tangible personal property and other tangible property (not including a building or its structural components) are credit-eligible. The basis of qualified property must be reduced by the amount of credit received.

Credits are available only for projects certified by the Secretary of Treasury, in consultation with the Secretary of Energy. The Secretary of Treasury must establish a certification program no later than 180 days after February 17, 2009 (the date of enactment of the American Recovery and Reinvestment Act of 2009), and may allocate up to \$2.3 billion in credits. No credit is allowed for any qualified investment that was allowed a credit under sections 48, 48A, or 48B.

In selecting projects, the Secretary may consider only those projects where there is a reasonable expectation of commercial viability. In addition, the Secretary must consider other selection criteria, including which projects (1) will provide the greatest domestic job creation; (2) will provide the greatest net impact in avoiding or reducing air pollutants or anthropogenic emissions of greenhouse gases; (3) have the greatest potential for technological innovation and commercial deployment; (4) have the lowest levelized cost of generated or stored energy, or of measured reduction in energy consumption or greenhouse gas emission; and (5) have the shortest project time from certification to completion.

Each project application must be submitted during the two-year period beginning on the date such certification program is established. An applicant for certification has one year from the date the Secretary accepts the application to provide the Secretary with evidence that the requirements for certification have been met. Upon certification, the applicant has three years from the date of issuance of the certification to place the project in service. Not later than four years after the date of enactment of the credit, the Secretary is required to review the credit allocations and redistribute any credits that were not used either because of a revoked certification or because of an insufficient quantity of credit applications.

H. Miscellaneous Energy Provisions

1. Tax-exempt bonds for power facilities (secs. 103, 141, and 142)

In general

Interest on bonds issued by State and local governments generally is excluded from gross income for Federal income tax purposes.¹⁵⁸ Because the interest income is excluded from gross income, investors generally are willing to accept a lower rate on tax-exempt bonds than they might otherwise accept on a taxable investment. Thus, issuers of such bonds receive an implicit Federal subsidy equal to the difference between the tax-exempt interest rate paid and the taxable rate that otherwise would be paid. In this way, the income exclusion lowers the cost of capital for State and local government. Activities that can be financed with tax-exempt bonds issued by State and local governments include electric power facilities (i.e., generation, transmission, distribution, and retailing).

Bonds issued by State and local governments may be classified as either governmental bonds or private activity bonds. Governmental bonds are bonds the proceeds of which are primarily used to finance governmental functions or which are repaid with governmental funds. Private activity bonds are bonds in which the State or local government serves as a conduit providing financing to nongovernmental persons. For these purposes, the term “nongovernmental person” generally includes the Federal Government and all other individuals and entities other than States or local governments. The exclusion from income for interest on State and local bonds does not apply to private activity bonds, unless the bonds are issued for certain permitted purposes (“qualified private activity bonds”) and other Code requirements are met.

Private activity bond tests

Present law provides two tests for determining whether a State or local bond is in substance a private activity bond and, as a result, not a governmental bond, the private business test and the private loan test.¹⁵⁹

Private business tests

Private business use and private payments result in State and local bonds being private activity bonds if both parts of the two-part private business test are satisfied--

1. More than 10 percent of the bond proceeds is to be used (directly or indirectly) by a private business (the “private business use test”); and

¹⁵⁸ Sec. 103(a).

¹⁵⁹ Secs. 141(b) and (c).

2. More than 10 percent of the debt service on the bonds is secured by an interest in property to be used in a private business use or to be derived from payments in respect of such property (the “private payment test”).¹⁶⁰

Private business use generally includes any use by a business entity (including the Federal government), which occurs pursuant to terms not generally available to the general public. For example, if bond-financed property is leased to a private business (other than pursuant to certain short-term leases for which safe harbors are provided under Treasury regulations), bond proceeds used to finance the property are treated as used in a private business use, and rental payments are treated as securing the payment of the bonds. Similarly, in the case of public power entities, if output of an electric generating plant or transmission or distribution facilities is provided to a private business on terms not generally available to other customers of the entity, an allocable portion of bonds financing the facilities is treated as used in a private business use and as secured by the payments from the private business.

Private business use also can arise when a governmental entity contracts for the operation of a governmental facility by a private business under a management contract that does not satisfy Treasury regulatory safe harbors regarding the types of payments made to the private operator and the length of the contract.¹⁶¹ These rules require public power entities to restrict the period of contracts with private businesses as well as the aggregate amount of electric service provided to private businesses on terms that are not generally available to customers of the entity, if interest on their bonds is to remain tax-exempt.

Private loan test

The second standard for determining whether a State or local bond is a private activity bond is whether an amount exceeding the lesser of (1) five percent of the bond proceeds or (2) \$5 million is used (directly or indirectly) to finance loans to private persons. Private loans include both business and other (e.g., personal) uses and payments by private persons; however, in the case of business uses and payments, all private loans also constitute private business uses and payments subject to the private business test. Present law provides that the substance of a transaction governs in determining whether the transaction gives rise to a private loan. In general, any transaction which transfers tax ownership of property to a private person is treated as a loan. In the context of public power, longer-term contracts for the sale of output may violate the private loan test, because these contracts have the substantive characteristics of a loan.

Under the Energy Policy Act of 2005, qualified natural gas contracts are not treated as private loans for purposes of the private business tests. A contract is a qualified natural gas

¹⁶⁰ The 10-percent private business use and payment threshold is reduced to five percent for private business uses that are unrelated to a governmental purpose also being financed with proceeds of the bond issue. In addition, as described more fully below, the 10-percent private business use and private payment thresholds are phased-down for larger bond issues for the financing of certain “output” facilities. The term output facility includes electric generation, transmission, and distribution facilities.

¹⁶¹ See Treas. Reg. sec. 1.141-3(b)(4) and Rev. Proc. 97-13, 1997-1 C.B. 632.

contract if the volume of natural gas secured for any year covered by the bond-financed contract does not exceed the sum of (1) the average annual natural gas purchased (other than for resale) by customers of a governmental utility within the service area of the utility (“retail natural gas consumption”) during a testing period, and (2) the amount of natural gas that is needed to fuel transportation of the natural gas to the governmental utility. For purposes of this rule, the testing period is the 5-calendar-year period immediately preceding the calendar year in which the bonds are issued. A retail customer is one who does not purchase natural gas for resale.

Special legislative rules for tax-exempt financing of governmental “output” facilities

In addition to the general private business use and payment tests, the Code includes specific provisions governing the issuance of governmental tax-exempt bonds to finance “output” facilities. Output facilities include facilities for electric and gas generation, transmission, and distribution.

\$15 million limit on private business use.—Present law imposes an additional restriction on private business use of State or local government bonds whose proceeds are to be used to finance output facilities.¹⁶² A bond is treated as issued to finance an output facility (and subject to this restriction) if five percent or more of the proceeds is to be used with respect to any output facility. Under this restriction, the 10-percent private business use and private payment tests in substance are phased down for facilities that receive more than \$15 million in tax-exempt bond financing. Significantly, unlike most tax-exempt bond restrictions, which are determined on a bond-issue by bond-issue basis, this restriction is measured by reference to all outstanding tax-exempt financing from which a facility benefits.

Bonds for acquisition of existing output property per se private activity.—In general, any bond with respect to which five percent or more (\$5 million if less) of the proceeds is to be used, directly or indirectly, by a governmental entity to acquire existing output property is per se a private activity bond.¹⁶³ As such, interest on the bond is taxable, unless the use of the acquired facility satisfies the provisions applicable to tax-exempt private activity bonds for the local furnishing of electricity (described below). The two-county (or a city and a contiguous county) service area requirement that applies to facilities for the local furnishing of electricity does not apply in this circumstance.

There are two exceptions to the rule regarding the acquisition of existing output property. First, the rule does not apply to bonds for the acquisition of existing facilities that will provide service in a “qualified service area” of the issuer. A qualified service area is defined as an area throughout which the acquiring entity has provided electric service for at least the 10-year period preceding the date of the acquisition. Second, the rule does not apply to bonds issued to acquire existing output property to be used in a “qualified annexed area” of a public power entity. The term qualified annexed area includes only areas (1) that are contiguous to existing service areas,

¹⁶² Sec. 141(b)(4).

¹⁶³ Sec. 141(d).

(2) that are annexed for general governmental purposes, and (3) the size of which does not exceed 10 percent of the public power entity's service area before the annexation occurs.

In addition, under the Energy Policy Act of 2005, qualified natural gas contracts (as defined above) are not treated as nongovernmental output property for purposes of the restrictions on the acquisition of such property.

Qualified private activity bonds

In general

As stated above, interest on private activity bonds is taxable unless the bonds meet the requirements for qualified private activity bonds. Qualified private activity bonds permit States or local governments to act as conduits providing tax-exempt financing for certain private activities. In most cases, the aggregate volume of these tax-exempt private activity bonds is restricted by annual aggregate volume limits imposed on bonds issued by issuers within each State. The Code further imposes several additional restrictions on tax-exempt private activity bonds that do not apply to bonds for governmental activities.

The definition of qualified private activity bonds includes an exempt facility bond, or qualified mortgage, veterans' mortgage, small issue, redevelopment, 501(c)(3), or student loan bond (sec. 141(e)). The definition of exempt facility bond includes bonds issued to finance certain transportation facilities (airports, ports, mass commuting, and high-speed intercity rail facilities); qualified residential rental projects; privately owned and/or operated utility facilities (sewage, water, solid waste disposal, and local district heating and cooling facilities, certain private electric and gas facilities, and hydroelectric dam enhancements); public/private educational facilities; qualified green building and sustainable design projects; and qualified highway or surface freight transfer facilities (sec. 142(a)).

Private activity bonds for the local furnishing of electricity

Qualified private activity bonds may be issued by States or local governments acting as conduits to finance generation, transmission, and distribution facilities for private businesses engaged in the local furnishing of electricity ("local furnishers"). A business is treated as engaged in local furnishing of electricity if the service territory in which the electricity is provided does not exceed (1) two contiguous counties, or (2) a city and a contiguous county. Historically, local furnishers eligible for this tax-exempt financing have included both investor-owned utilities ("IOUs") and independent power ventures. These bonds may be issued for the benefit of only those persons that were engaged in local furnishing of electricity in the service territory in which the new facilities will be used as of January 1, 1997, or in qualified expansions of those service territories. A "qualified expansion" is limited to service territory that is a part of a county in which the local furnisher was providing electric service on that date. For example, if a local furnisher was providing electric service to one county and a portion of a contiguous county on January 1, 1997, bonds may be issued for the continued provision of service both within that area and also for service to be provided in the remaining portion of the contiguous county in the future. In addition to persons actually engaged in local furnishing activities on January 1, 1997, the Code allows certain successors in interest to persons that qualified as local

furnishers on that date to “step into the shoes” of the predecessor local furnishers provided that the service territories served otherwise satisfy the requirements for local furnishing.

Notwithstanding the general limits on service territories of local furnishers, the Code includes special rules allowing these electric service providers to transmit (“wheel”) electricity through their systems, if ordered by the Federal Energy Regulatory Commission to do so under sections 211 or 213 of the Federal Power Act, provided that the size of the transmission lines or other facilities used in these wheeling activities does not exceed the capacity required to serve their otherwise qualified two contiguous county service area or city and contiguous county service area.

Hydro-electric generating facilities

Present law also permits the issuance of qualified private activity bonds for “environmental enhancements of hydro-electric generating facilities.” Eligible facilities include those that protect or promote fisheries or other wildlife resources and those for recreational purposes or other improvements required by the terms of a Federal license for the operation of a hydro-electric generating facilities. This provision was enacted to permit tax-exempt financing of certain renovations to the dams and accompanying hydroelectric electric generating facilities along the Columbia River that are a part of the Bonneville Power Administration system. Bonds issued for these purposes are not subject to the State volume limitations applicable to most qualified private activity bonds.

2. Reduced rate of tax for diesel-water fuel emulsion (secs. 4081(a)(2)(D), 4081(c), and 6427(m))

Diesel fuel is taxed at 24.3 cents per gallon. A special tax rate of 19.7 cents per gallon is provided for diesel fuel blended with water into a diesel-water fuel emulsion to reflect the reduced Btu content per gallon resulting from the water. Emulsion fuels eligible for the special rate must consist of at least 14 percent water. The emulsion additive must be registered by a United States manufacturer with the Environmental Protection Agency pursuant to section 211 of the Clean Air Act (as in effect on March 31, 2003). A refund of the difference between the regular rate for diesel fuel (24.3 cents per gallon) and the incentive rate for diesel-water emulsions (19.7 cents per gallon) is available to the extent tax-paid diesel is used to produce a qualifying emulsion diesel fuel. Anyone who separates the diesel fuel from the diesel-water fuel emulsion on which a reduced rate of tax was imposed is treated as a refiner of the fuel and is liable for the difference between the amount of tax on the latest removal of the separated fuel and the amount of tax that was imposed upon the pre-mixture removal. The special tax rate does not apply if the person removing, selling or using such fuel is not registered with the IRS.

3. Exceptions for publicly traded partnerships treated as corporations (secs. 7704 and 851)

Treatment as a corporation

Present law provides that a publicly traded partnership means a partnership, interests in which are traded on an established securities market, or are readily tradable on a secondary market (or the substantial equivalent thereof). In general, a publicly traded partnership is treated as a corporation, but an exception to corporate treatment is provided if 90 percent or more of its

gross income is interest, dividends, real property rents, or certain other types of qualifying income.¹⁶⁴

Under this exception, income and gains from certain activities with respect to minerals or natural resources are treated as qualifying income. Specifically, among other types of income, qualifying income includes income and gains derived from the exploration, development, mining or production, processing, refining, transportation (including pipelines transporting gas, oil, or products thereof), or the marketing of any mineral or natural resource (including fertilizer, geothermal energy, and timber). For this purpose, oil, gas, or products thereof means gasoline, kerosene, number 2 fuel oil, refined lubricating oils, diesel fuel, methane, butane, propane, and similar products which are recovered from petroleum refineries or field facilities. Oil, gas, or products thereof are not intended to encompass oil or gas products that are produced by additional processing beyond that of petroleum refineries or field facilities, such as plastics or similar petroleum derivatives.

Qualifying income for regulated investment companies

A regulated investment company (RIC) generally is treated as a conduit for Federal income tax purposes. To qualify for conduit treatment, at least 90 percent of the RIC's gross income must fall within specified categories (dividends, interest, and other specified types). Income derived from a partnership generally is treated as meeting this requirement only to the extent such income is attributable to items of income of the partnership that would meet the requirement if realized by the RIC in the same manner as realized by the partnership (the "look-through" rule for partnership income).¹⁶⁵

In the case of a publicly traded partnership, present law provides that the 90-percent test with respect to income of a RIC includes net income derived from an interest in a publicly traded partnership. The look-through rule for partnership income of a RIC applies only to income from a partnership other than a publicly traded partnership.

¹⁶⁴ Sec. 7704.

¹⁶⁵ Sec. 851.

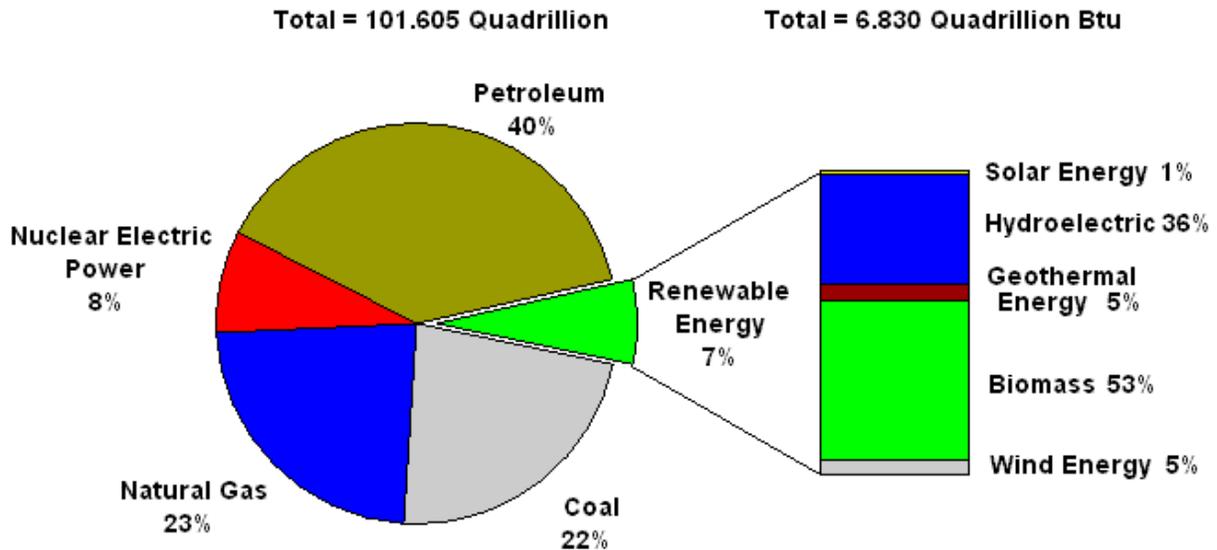
III. DATA AND ANALYSIS

Energy tax expenditures and sources of U.S. energy supply

Table 9, below, shows the staff of the Joint Committee on Taxation’s most recent estimates of the energy-specific tax expenditures. The largest tax expenditure items generally occur in the oil and gas industries, owing at least in part to the relative size of such industries as compared to the renewable energy sector.

In recent years there has been increased interest in providing tax subsidies for conservation of energy and for development of renewable sources of energy. However, the United States continues to rely primarily on fossil fuel sources for energy. In 2007, 85 percent of U.S. energy supply came from fossil fuels, eight percent from nuclear electric power, and only seven percent from renewable sources of energy. Chart 1, below, shows the distribution of the U.S. energy supply by source of energy – petroleum, natural gas, coal, nuclear, and renewable.

Chart 1.—The Role of Renewable Energy Consumption in the Nation’s Energy Supply, 2007



Source: Energy Information Administration, Renewable Energy Consumption and Electricity Preliminary 2007 Statistics, May 2008.

Table 9.—Energy-Related Tax Expenditure Estimates, Fiscal Years 2008 - 2012

[Billions of Dollars]

Function	Corporations					Individuals					Total
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008-12
<i>Energy related credits:</i>											
Credit for enhanced oil recovery costs.....	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	0.2
Credit for producing fuels from a non-conventional source.....	0.1	0.1	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	0.6
Credits for alcohol fuels [2].....	0.1	0.1	0.1	[1]	---	---	---	---	---	---	0.3
Energy credit (section 48):											
Solar.....	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
Geothermal.....	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
Fuel cells.....	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
Microturbines.....	---	---	---	---	---	[1]	[1]	[1]	[1]	[1]	[1]
Credits for electricity production from renewable resources (section 45):											
Wind.....	0.6	0.8	0.9	0.9	0.9	[1]	[1]	[1]	[1]	[1]	4.1
Closed-loop biomass.....	[1]	[1]	[1]	[1]	[1]	---	---	---	---	---	[1]
Geothermal.....	[1]	[1]	[1]	[1]	[1]	---	---	---	---	---	0.2
Qualified hydropower.....	[1]	[1]	[1]	[1]	[1]	---	---	---	---	---	0.1
Solar (limited to facilities placed in service before 1/1/06).....	[1]	[1]	[1]	[1]	[1]	---	---	---	---	---	0.1
Small irrigation power.....	[1]	[1]	[1]	[1]	[1]	---	---	---	---	---	0.1
Municipal solid waste.....	[1]	[1]	[1]	[1]	[1]	---	---	---	---	---	0.2
Open-loop biomass.....	0.3	0.4	0.3	0.2	0.2	[1]	[1]	[1]	[1]	[1]	1.5
Credits for investments in clean coal facilities.....	0.2	0.2	0.2	0.1	0.1	---	---	---	---	---	0.8
Coal production credits:											
Refined coal.....	[1]	[1]	[1]	[1]	[1]	---	---	---	---	---	0.1
Indian coal.....	[1]	[1]	[1]	[1]	[1]	---	---	---	---	---	0.1
Credit for the production of energy-efficient appliances.....	0.1	0.1	0.1	[1]	---	---	---	---	---	---	0.3
Credits for alternative technology vehicles:											
Hybrid vehicles.....	[1]	[1]	[1]	[1]	[1]	0.2	0.2	0.2	0.1	[1]	0.9

Function	Corporations					Individuals					Total
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008-12
Other alternative fuel vehicles.....	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	0.1
Credit for clean-fuel vehicle refueling property.....	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	0.1
Residential energy efficient property credit.....	---	---	---	---	---	[1]	[1]	---	---	---	0.1
New energy efficient home credit.....	[1]	[1]	[1]	[1]	[1]	---	---	---	---	---	0.1
Credit for energy efficiency improvements to existing homes.....	---	---	---	---	---	0.8	0.3	1.0	---	---	2.1
Credits for alternative technology vehicles.....	0.1	[1]	[1]	[1]	[1]	0.2	0.2	0.2	[1]	[1]	1.0
Credit for holders of clean renewable energy bonds.....	[1]	0.1	0.1	0.1	0.1	[1]	[1]	[1]	[1]	[1]	0.5
Credit for holder of qualified energy conservation bonds.....	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	0.1
<i>Energy-related exclusions from income:</i>											
Exclusion of interest on State and local government qualified private activity bonds for energy production facilities.....	[1]	[1]	[1]	[1]	[1]	0.1	0.1	0.1	0.1	0.1	0.6
Exclusion of energy conservation subsidies provided by public utilities.....	---	---	---	---	---	[1]	[1]	[1]	[1]	[1]	0.1
<i>Energy-related deductions:</i>											
Deduction for expenditures on energy-efficient commercial building property.....	[1]	0.1	0.1	0.1	0.1	[1]	[1]	[1]	[1]	[1]	0.2
Eight-year inclusion from sale of electric transmission assets to independent utilities.....	0.3	0.2	[1]	-0.1	-0.1	[1]	[1]	[1]	[1]	[1]	0.3
Expensing of exploration and development costs:											
Oil and gas.....	2.1	3.0	1.7	0.4	0.4	[1]	[1]	[1]	[1]	[1]	7.2
Other fuels.....	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	0.3
Excess of percentage over cost depletion:											
Oil and gas.....	1.3	1.4	1.4	1.4	1.4	[1]	[1]	[1]	[1]	[1]	7.1
Other fuels.....	0.1	0.1	0.1	0.1	0.1	[1]	[1]	[1]	[1]	[1]	0.8
Amortization of geological and geophysical expenditures associated with oil and gas exploration.....											
Amortization of air pollution control facilities.....	0.1	0.2	0.2	0.2	0.2	[1]	0.1	0.1	0.1	0.1	1.3
Amortization of air pollution control facilities.....											
Depreciation recovery periods for energy specific items:	0.1	0.1	0.1	0.2	0.2	[1]	[1]	[1]	[1]	[1]	0.6
Five-year MACRS for certain energy property (solar, wind, etc.)..											
10-year MACRS for smart electric distribution property.....	0.2	0.1	0.1	0.1	0.1	[1]	[1]	[1]	[1]	[1]	0.5
	[1]	[1]	[1]	[1]	[1]	0.1	[1]	[1]	[1]	[1]	0.1

Function	Corporations					Individuals					Total
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012	2008-12
15-year MACRS for certain electric transmission property.....	[1]	0.1	0.1	0.2	0.2	[1]	[1]	[1]	[1]	[1]	0.6
15-year MACRS for natural gas distribution line.....	0.1	0.1	0.1	0.1	0.1	[1]	[1]	[1]	[1]	[1]	0.6
Election to expense 50 percent of qualified property used to refine liquid fuels.....	0.4	1.1	0.9	0.8	0.6	[1]	[1]	[1]	[1]	[1]	3.8
Exceptions for publicly traded partnership with qualified income derived from certain energy-related activities.....	---	---	---	---	---	0.4	0.4	0.5	0.6	0.6	2.6

Joint Committee on Taxation.

Estimates based on the January 2008 Congressional Budget Office baseline for tax expenditures under present law as of October 31, 2008.

NOTE: Details may not add to totals due to rounding.

[1] Positive tax expenditure of less than \$50 million.

[2] In addition, the credit from excise tax for alcohol fuels results in a reduction in excise tax receipts, net of income tax effect, of \$13.6 billion over the fiscal years 2008 through 2012.

General economic rationale for certain tax expenditure intervention in energy markets

A common economic rationale for government intervention in certain markets (including many aspects of energy markets) is that often there exist “externalities” in the consumption or production of certain goods that lead to “market failures,” wherein either too little or too much of certain economic activity occurs relative to what is the socially optimal level of activity. An externality exists when, in the consumption or production of a good, there is a difference between the cost or benefit to an individual from consumption or production and the cost or benefit to society as a whole. When the society-wide, or “social” costs of consumption exceed the private costs of consumption, a negative externality exists. When the social benefits from consumption or production exceed private benefits, a positive externality exists. When negative externalities exist, there will be over-consumption of the good causing the negative externality relative to what would be socially optimal. When positive externalities exist, there will be under consumption of the good producing the positive externality. The reason for the over consumption or under consumption is that private actors will in general not take into account the effect of their consumption on others, but only weigh their personal costs and benefits in their decisions. Thus, they will consume goods up to the point where their marginal benefit of more consumption is equal to the marginal cost (generally, the price) that they face. But from a social perspective, consumption should occur up to the point where the marginal social cost (generally, the price to the consumer plus any external costs imposed on others) is equal to the marginal social benefit (the benefit received by the consumer, plus any social benefit from the individual consumption). Absent any government intervention, only when there are no externalities will the private actions lead to the socially optimal level of consumption or production, because only in this case will private costs and benefits be equal to social costs and benefits.

As a general matter of economic efficiency, tax preferences designed to influence investment choices should be used only when it is acknowledged that market-based pricing signals have led to a lower level of investment in a good than would be socially optimal. In general, this can occur in a market-based economy when private investors do not capture the full value of an investment—that is, when there are positive externalities to the investment that accrue to third parties who did not bear any of the costs of the investments. For example, if an individual or corporation can borrow funds at 10 percent and make an investment that will return 15 percent, they will generally make that investment. However, if the return were 15 percent, but only 8 percent of that return went to the investor, and seven percent to society at large, the investment will generally not take place, even though the social return (the sum of the return to the investor and other parties) would indicate that the investment should be made. In such a situation, it may be desirable to subsidize the return to the investor through tax credits or other mechanisms in order that the investor’s return is sufficient to cause the socially desirable investment to be made. In this example, a credit that raises the return to the investor to at least 10 percent would be necessary. Even if the cost of the credit were paid through general tax increases for others, they would presumably be better off since they enjoy a seven percent return from the investment, and the credit would only need to raise the return to the investor by two percent for him or her to break even. Thus, even if the rest of society bears the full cost of the credit, they would enjoy a five-percent net return to the investment (seven percent less two percent).

Pollution is an example of a negative externality, because the costs of pollution are borne by society as a whole rather than solely by the polluters themselves. In the case of pollution, there are various ways the government could intervene in markets to limit pollution to more economically efficient levels. One approach is to control pollution directly through regulation of polluters, such as by requiring coal burning electric utilities to install scrubbers to limit their emissions of various pollutants. Other more market oriented approaches to achieving socially optimal levels of pollution control are also possible. One such approach is to set a tax on the polluting activity that is equal to the social cost of the pollution. Thus, if burning a gallon of gasoline results in pollution that represents a cost to society as a whole of \$1, it would be economically efficient to tax gasoline at \$1 per gallon. By so doing, the externality is said to be internalized, because now the private polluter faces a private cost equal to the full social cost, and the socially optimal amount of consumption will take place. An alternative market-based approach to control pollution is to employ a system of payments, such as perhaps tax credits, to essentially pay polluters to reduce pollution. If the payments can be set in such a way as to yield the right amount of reduction (that is, without paying for reduction more than the reduction is valued, or failing to pay for a reduction where the payment would be less than the value of the pollution reduction), the socially desirable level of pollution will result. The basic difference between these two approaches is a question of who pays for the pollution reduction. The tax approach suggests that the right to clean air is paramount to the right to pollute, as polluters and those who buy goods and services from polluters would bear the social costs of their pollution. The alternative approach suggests that the pollution reduction costs should be borne by those who receive the benefit of the reduction.

In the case of a positive externality, the appropriate economic policy would be to impose a negative tax (i.e., a tax preference) on the consumption or production that produces the positive externality. By the same logic as above, the externality becomes internalized, and the private benefits from consumption become equal to the social benefits, leading to the socially optimal level of consumption or production. An example where such a positive externality is thought to exist is in basic scientific research, as the social payoffs to such research are not fully captured by private parties that undertake, and incur the cost of, such research. As a result, a socially sub-optimal level of such research is undertaken. The provision of a subsidy for such research can correct this market inefficiency and lead to socially optimal levels of research.

Some have also argued that decreasing the dependence of the U.S. on foreign source energy is desirable for geopolitical and national defense reasons, and that this provides a rationale for subsidizing domestic fossil fuel production as well as subsidizing conservation and renewable energy production. However, in recent years there has been increasing focus in the tax code on energy conservation and renewable energy production incentives. The remainder of the discussion herein will focus on some considerations in the design of these incentives.

Issues in the design and efficacy of tax expenditures for energy conservation and renewable energy production

Economists generally agree that the most efficient means of addressing pollution would be through a direct tax on the pollution-causing activities, rather than through the indirect approach of targeted tax credits for certain technologies. By the direct tax approach, the establishment of the economically efficient prices on pollutants, through taxes, would result in

the socially optimal level of pollution. To achieve this result, the tax would be set equal to the cost to society of the incremental pollution. The imposition of a direct tax on the pollution-causing activity would indirectly lead to the adoption of the types of technologies favored in the tax code, but only if these technologies were in fact the most socially efficient technologies. A tax on the pollution causing activity is technologically neutral—a tax does not favor any particular technology that individuals might choose to utilize, or favor any particular behavioral modification that individuals may choose to make, in their pollution reducing responses to the tax. Rather, individuals would choose the most cost effective and economically efficient means of altering their behavior in response to the tax. For example, the optimal behavioral responses to a broad based tax on fossil fuels would lead to installation of greater amounts of home insulation, but would also lead to individuals turning down the thermostat or switching off unnecessary lighting. It would be difficult or impractical to design tax subsidies to directly incentivize the turning down of thermostats, the switching off of lights, or other similar forms of optimizing behavior.

Nonetheless, many provisions of current law provide targeted tax credits for investment in, or expenditures on, certain assets that reduce, directly or indirectly, the consumption of conventional fuels and the attendant pollutants and emissions of gases related to atmospheric warming. The design of these tax benefits is important to how close they will come, individually and collectively, to achieving their intended objectives in a cost effective and efficient manner. Ideally, their design would be coordinated to try to mimic the more economically efficient outcome that a broad based tax would provide.

The most important consideration in the efficient design of targeted subsidies is to determine what activities to subsidize and how much to subsidize them (i.e., what a credit rate should be, for example). In setting the policy parameters, the government is implicitly setting the price it will pay for the energy production or conservation that is produced or conserved in the manner specified by the tax provision. To be technologically neutral and economically efficient, the government should seek to set its policy parameters so that the implicit price it pays for the same good, say fossil fuel displacement (typically measured in millions of British thermal units,¹⁶⁶ or “MMBtu’s”), is the same under each tax provision that has the same purpose. If it sets its policies in this manner, then only the most cost effective production of such fossil fuel MMBtu displacement will be subsidized.

While the government’s policy parameters indicate the price it is willing to pay for fossil fuel MMBtu displacement at the margin, in practice it is difficult to know how much overall incremental fossil fuel displacement (pollution reduction) the government is buying in the aggregate with a given conservation or renewables production credit. The reason is that the government subsidy typically applies to “inframarginal” activity, or activity that would have occurred even in the absence of the credit, so for such activity the government incurs an expense in subsidizing it in order to induce others at the margin to engage in the tax-favored activity. For example, a credit exists for the purchase of certain energy efficient furnaces. If we assume the

¹⁶⁶ A British thermal unit is the amount of heat required to raise the temperature of one pound of water 1 degree Fahrenheit.

credit were \$500 and assume that the typical energy consumption from the efficient furnace as compared to an average furnace resulted in 1,000 MMBtu less fossil fuel consumption over its lifetime, then government has set the price of 50 cents for each MMBtu of displaced fossil fuel consumption to encourage the adoption of the more efficient furnace. However, many investments in the energy efficient furnaces might have taken place even in the absence of the credit, and thus the government pays, via the credit, for fossil fuel displacement that would have occurred anyway. If two million furnaces are sold (leading to a billion dollars in credits being claimed), but only 200,000 of these were sold as a direct result of the credit, then only one tenth (200,000 divided by 2 million) of the fossil fuel displacement from the energy efficient furnaces can be said to have occurred because of the credit. Thus, in this hypothetical example, the true budget cost of the aggregate incremental displaced fossil fuel consumption is 10 times the implicit government price at the margin, or \$5, for each MMBtu of displaced fossil fuel consumption.¹⁶⁷ Additionally, individuals who have purchased a more efficient furnace might choose to heat their home to a greater degree since it will cost less to do so, thus negating some of the initial fossil fuel displacement from the purchase of the more efficient furnace, and further inflating the cost to the government of a given amount of fossil fuel displacement.¹⁶⁸

While the government can in theory establish an efficient set of subsidies for the activities it chooses to subsidize, in practice it cannot administratively identify and set up programs to subsidize every conceivable energy saving practice. Additionally, it is not possible to identify meritorious technologies not yet invented, and the government must continue to expand the class of credit-eligible activities if it wishes to minimize the economic distortions that come from favoring certain technologies through tax subsidies over other technologies that prove equally capable of achieving reductions in fossil fuel consumption. Furthermore, the investment in research to develop such new technologies might be constrained by the existence of tax subsidies for current technologies, as investors in such research run the political risk that their newly discovered technologies will not be granted any tax subsidies in order to compete favorably with subsidized technologies.

Table 10 compares the implicit price that the government is willing to pay per MMBtu of fossil fuel displacement of selected tax subsidies. The differing amounts paid for a given amount of MMBtu show that the government's policies are not coordinated to pay the same price for MMBtu displacement regardless of source, and thus at the margin the government pays more to purchase MMBtu displacement from certain activities over other activities, which is not

¹⁶⁷ This type of budgetary inefficiency can sometimes be tempered by targeting the credit at investment or expenditures above a base amount.

¹⁶⁸ In the conservation literature, this phenomenon of greater energy efficiency leading to behavioral responses that tend to increase the use of the more energy efficient equipment has come to be termed the "rebound effect," and has been estimated to reduce expected energy savings by up to 30 percent in the case of space heating and automobiles (see Frank Gottron, "Energy Efficiency and the Rebound Effect: Does Increasing Efficiency Decrease Demand?," Congressional Research Service report RS20981, July 2001.)

economically efficient.¹⁶⁹ Column 1 in Table 10 lists the statutory credit amount in cents per kilowatt-hour and dollars or cents per gallon. Column 2 normalizes the statutory credit amounts to express them in terms of dollars per unit of heat energy (in millions of Btu's) embedded in the fuel or in the kilowatt-hour of electricity. While a renewable fuel, such as ethanol, directly displaces a fossil fuel on a Btu per Btu basis, the fossil fuel heat energy that a kilowatt-hour of renewable electricity displaces (because a fossil fuel plant will not have to generate that kilowatt-hour) will depend on the thermal efficiency with which a fossil-fueled electricity generation station converts the heat energy of the fossil fuel to the heat energy of a kilowatt-hour of electricity. This measure of the generating station's thermal efficiency is known as the "heat rate." According to the Department of Energy, the average annual heat rate factor for fossil-fueled power plants in the United States in 2007 was 9,884 Btus per kilowatt-hour. Thus, though a kilowatt-hour of electricity has heat energy of 3,412 Btus, as noted at the bottom of Table 10, it requires on average 9,884 Btus of fossil fuel to produce that kilowatt-hour at a domestic fossil-fuel-burning power plant. Thus, a kilowatt-hour of renewable electricity displaces on average 9,884 Btus of fossil fuel feedstock. Column 3 in Table 10 shows the credit amount per million Btus of displaced fossil fuel consumption. If the objective of the federal government's renewable energy policy is defined as displacement of fossil fuel energy, then column 3 shows the varying amounts that the government pays to accomplish that objective.

As noted above, it cannot be known from this information alone what the total budget cost of the aggregate *incremental* renewable production that occurs as a result of the credits, due to renewable production that would have occurred in the absence of the credits. If, as an example, half of the wind energy production would have occurred in any event, then the total federal revenue cost of achieving the incremental wind energy produced is twice that stated in the table, if one assumes that all wind energy produced receives the credit.¹⁷⁰

¹⁶⁹ This discussion assumes that the benefits across all types of alternative energy are equivalent, and assumed to be the displacement of a fossil fuel. In reality, different alternative energy sources might displace different types of fossil fuels, whose negative externalities may vary. Also, the production of certain renewables, such as solar or wind energy, may be more benign than the production of others, such as ethanol. Thus, depending on these other factors, varying credit rates could be economically efficient if there are differences across the renewable in the net benefits from each renewable and the fossil fuel it displaces.

¹⁷⁰ The sec. 45 electricity production credit is allowed only on the wind produced for the first ten years the facility is placed in service. If the existence of the credit induces a wind facility to be built that would not otherwise have been, and such a facility lasts for 20 years, then half of the wind produced from such facility does not receive any federal credit, and the true cost of the federal credit for that facility is half of what is shown on the table.

Table 10.—Comparison of Selected Energy Production Tax Credits

	(1) Statutory credit amount	(2) Credit amount in dollars per MMBtus of heat energy	(3) Credit amount in dollars per MMBtus of displaced heat energy of fossil fuel feedstock
Wind power	2.1 cents per kilowatt-hour	\$6.15	\$2.12
Geothermal power	2.1 cents per kilowatt-hour	\$6.15	\$2.12
Open-loop biomass	1 cent per kilowatt-hour	\$2.93	\$1.01
Advanced nuclear power	1.8 cents per kilowatt-hour	\$5.28	\$1.82
Ethanol	45 cents per gallon	\$5.92	\$5.92
Biodiesel	\$1 per gallon	\$8.45	\$8.45

Notes:

1 kilowatt-hour = 3,412 Btus

1 gallon of ethanol = 76,000 Btus (low heating value)

1 gallon of biodiesel = 118,296 Btus (low heating value)

Displaced fossil fuel feedstock calculation assumes a fossil fuel heat rate thermal conversion factor for wind, geothermal, biomass, and nuclear power of 9,884 Btus per kilowatt-hour.

Btus per kw-hour and thermal heat rate conversion factor taken from Energy Information Agency, Monthly Energy Review, Table A6 (April 2009)

Btu content of ethanol and biodiesel taken from Energy Information Agency, Annual Energy Outlook, Table 12 (2007)

One can also compute the implicit price that the government is willing to pay per MMBtu for the various provisions designed to encourage taxpayers to conserve energy. As an example, Table 11, below, computes the implicit price the government is willing to pay to conserve motor fuel (normalized to MMBtu to facilitate comparison to Table 10, above) in the case of three hybrid motor vehicles available for purchase in 2006 for which taxpayers could claim a tax credit. For each vehicle listed in Table 11 the EPA estimated fuel economy for the vehicle was compared to a comparable non-hybrid vehicle and the lifetime fuel saving was calculated (third column).¹⁷¹ The last column reports the estimated implicit price the government paid to

¹⁷¹ The calculations were made by the Congressional Research Service. The comparison assumes both the hybrid motor vehicle and the comparable non-hybrid vehicle would have a life of 15 and one quarter years. Miles driven were not assumed to be constant across the 15.25-year life of the

conserve one million Btu by dividing the maximum eligible tax credit a taxpayer could claim on the hybrid motor vehicle by the amount of energy saved over the life of the vehicle.

Table 11.—Estimated Tax Credit Per MMBtu Conserved by Purchase of Selected Hybrid Motor Vehicles			
Vehicle	Maximum Eligible Tax Credit	Estimated Lifetime Fuel Saving	Dollars of Tax Credit Per MMBtu
2007 Toyota Camry 2.4 L four-door sedan	\$2,600	39 barrels of oil	\$11.49
2006 Honda Accord V6 AT four-door sedan	\$1,300	34 barrels of oil	\$6.59
2006 GMC Sierra 1500 SL pickup four wheel drive pickup truck	\$650	20 barrels of oil	\$5.60

As was the case for the energy production tax credits reviewed in Table 10, Table 11 shows that the credits for the purchase of hybrid motor vehicles were not coordinated to pay the same price of MMBtu displacement regardless of source, and thus at the margin the government would pay more to purchase MMBtu displacement from certain vehicles over other vehicles, which creates an inefficiency to the government’s tax expenditure.

Similar calculations can be made for other tax preferences that are intended to encourage conservation or displace existing energy sources with more environmentally benign energy sources. However, many such calculations are sensitive to the geographic location of the taxpayer and the qualified energy property. The payoff in reduced energy consumption from additional insulation of a personal residence depends upon the climate in which the taxpayer resides and the amount of insulation initially in the residence. The tax credit available to taxpayers for additional insulation depends only upon the quantity of insulation and the price paid for the insulation, and the price of insulation does not vary widely across the nation. Therefore, the implicit price that the government is willing to pay per MMBtu conserved will vary with such factors as the location of the taxpayer and pre-existing levels of insulation. As a further example, consider the hypothetical installation of a 10-kilowatt-hour rated photovoltaic power system. The University of California Energy Institute estimates the installed cost of such a system at approximately \$80,000.¹⁷² If, over the assumed 25-year life of such a system, it

vehicles, but rather varied with the age of the vehicle. The comparable non-hybrid vehicles were the 2007 model Toyota Camry LE four-door sedan, the 2006 Honda Accord V6 EX four-door sedan, and the 2006 GMC Sierra K 1500 four wheel drive pickup truck.

¹⁷² Severin Borenstein, “The Market Value and Cost of Solar Photovoltaic Electricity Production,” Center for the Study of Energy Markets Working Paper 176, University of California, Berkeley, January 2008.

could garner eight hours of daylight for 365 days per year, it would produce 730,000 kilowatt-hours of electricity offsetting as much electricity produced from other sources. The present-law 30-percent tax credit for the installation of such a system would imply that the government was willing to pay \$9.64¹⁷³ per MMBtu of displaced electricity. However, if the same system were only to average five hours of sunlight per day, it would produce 456,250 kilowatt-hours of electricity. As the installed cost of the system does not vary, in this case the present-law 30-percent tax credit for the installation of the system would imply that the government was willing to pay \$15.42¹⁷⁴ per MMBtu of displaced electricity.

Alternative minimum tax, nonrefundability, and other constraints on tax expenditures

Another design issue that affects the efficacy of many tax credits is their restricted availability. Many tax credits have stipulated dollar limitations, are nonrefundable, or cannot be used to offset tax liability determined under the alternative minimum tax (“AMT”). If a credit designed to overcome an externality is capped, then after the cap is reached the marginal cost of further investment becomes equal to the market price again, which is presumed to be inefficient because of the externality. The impact of these limitations is to make the credit less valuable to those without sufficient tax liability to claim the full credit, for those subject to the AMT, or those who have reached any cap on the credit. Given the arguments outlined above as to the rationale for targeted tax credits, it is not economically efficient to limit their availability based on the tax status of a possible user of the credit. It can be argued that, if such social benefits exist and are best achieved through the tax system, the credit should be both refundable and available to AMT taxpayers. In some cases making the credits refundable may introduce compliance problems that would exceed the benefits from encouraging the targeted activities for the populations lacking sufficient tax liability to make use of the credit. With respect to the AMT, the rationale for the limitation is to protect the objective of the AMT, which is to insure that all taxpayers pay a minimum (determined by the AMT) amount of tax. Two differing policy goals thus come in conflict in this instance. Similarly, caps on the aggregate amount of a credit that a taxpayer may claim are presumably designed to limit the credit’s use out of some sense of fairness, but again, this conflicts with the goal of pollution reduction.

¹⁷³ If measured in terms of displaced fossil fuel consumption as was done in column 3 of Table 10, the comparable figure would be \$3.33 per MMBtu of displaced fossil fuel consumption.

¹⁷⁴ If measured in terms of displaced fossil fuel consumption as was done in column 3 of Table 10, the comparable figure would be \$5.32 per MMBtu of displaced fossil fuel consumption.