

Legislation and Regulations

Introduction

Because analyses by the Energy Information Administration (EIA) are required to be policy-neutral, the projections in this *Annual Energy Outlook 2003* (*AEO2003*) are based on Federal, State, and local laws and regulations in effect on September 1, 2002. The potential impacts of pending or proposed legislation, regulations, and standards (and sections of existing legislation requiring funds that have not been appropriated) are not reflected in the projections.

Examples of Federal legislation incorporated in the projections includes the National Appliance Energy Conservation Act of 1987; the Clean Air Act Amendments of 1990 (CAAA90); the Energy Policy Act of 1992 (EPACT); the Omnibus Budget Reconciliation Act of 1993, which added 4.3 cents per gallon to the Federal tax on highway fuels; the Outer Continental Shelf Deep Water Royalty Relief Act of 1995 and subsequent provisions on royalty relief for new leases issued after November 2000 on a lease-by-lease basis; the Tax Payer Relief Act of 1997; the Federal Highway Bill of 1998, which included an extension of the ethanol tax incentive; new standards for motor gasoline and diesel fuel and for heavy-duty vehicle emissions; the new standards for energy-consuming equipment that were announced in 2001; and the Job Creation and Worker Assistance Act of 2002, which extended the production tax credit to certain renewable energy sources.

AEO2003 assumes that State taxes on gasoline, diesel, jet fuel, M85, and E85 will increase with inflation and that Federal taxes on those fuels will continue at 2001 levels in nominal terms. *AEO2003* also assumes the continuation of the ethanol tax incentive through 2025. Although these tax and tax incentive provisions include “sunset” clauses that limit their duration, they have been extended historically, and *AEO2003* assumes their continuation throughout the forecast.

AEO2003 also recognizes the regulatory actions of the Federal Energy Regulatory Commission (FERC), including Orders 888 and 889, which provide open access to interstate transmission lines in electricity markets. State plans for the restructuring of the electricity industry and State renewable portfolio standards are incorporated as enacted. As of November 2002, 17 States and the District of Columbia still had active electric restructuring programs based on legislation previously passed or regulations promulgated. Five states have delayed restructuring activities, and one, California, has suspended restructuring.

CAAA90 requires a phased reduction in vehicle emissions of regulated pollutants, to be met primarily through the use of reformulated gasoline. In addition, under CAAA90, there is a phased reduction in annual emissions of sulfur dioxide by electricity generators, which in general are capped at 8.95 million tons per year in 2010 and thereafter, although “banking” of allowances from earlier years is permitted. The *AEO2003* incorporates nitrogen oxide (NO_x) boiler standards issued by the U.S. Environmental Protection Agency (EPA) under CAAA90. In addition, the 19-state NO_x cap and trade program in the Northeast and Midwest is also represented. CAAA90 also required the EPA to study the effects of mercury emissions from power plants and determine whether they should be regulated. The EPA has so determined and is now in the process of deciding what the limits on mercury emissions from power plants will be. Those limits will be announced by the end of 2004. Because they have not been promulgated, they are not incorporated in *AEO2003*.

AEO2003 reflects “Tier 2” Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements finalized by the EPA in February 2000. The Tier 2 standards for reformulated gasoline (RFG) will be required by 2004 but will not be fully realized in conventional gasoline until 2008 due to allowances for small refineries. *AEO2003* also incorporates the “ultra-low-sulfur diesel” (ULSD) regulation finalized by the EPA in December 2000, which requires the production of 80 percent ULSD and 20 percent 500 part per million (ppm) highway diesel between June 2006 and June 2010, with a 100-percent requirement for ULSD thereafter. The *AEO2003* projections reflect legislation that bans or limits the use of the gasoline blending component methyl tertiary butyl ether (MTBE) in the next several years in 17 States and assumes that the Federal oxygen requirement for RFG in Federal nonattainment areas will remain intact.

The provisions of EPACT focus primarily on reducing energy demand. They require minimum building efficiency standards for Federal buildings and other new buildings that receive Federally backed mortgages. Efficiency standards for electric motors, lights, and other equipment are required, and Federal, State, and utility vehicle fleets are required to phase in vehicles that do not rely on petroleum products. The projections include only those equipment standards for which final actions have been taken and for which specific efficiency levels are provided.

Energy combustion is the primary source of anthropogenic (human-caused) carbon dioxide emissions. *AEO2003* estimates of emissions do not include emissions from activities other than fuel combustion, such as landfills and agriculture, nor do they take into account “sinks” that absorb carbon dioxide, such as forests.

The *AEO2003* reference case projections include analysis of the programs in the Climate Change Action Plan (CCAP)—44 actions developed by the Clinton Administration in 1993 to achieve the stabilization of greenhouse gas emissions (carbon dioxide, methane, nitrous oxide, and others) in the United States at 1990 levels by 2000. Of the 44 CCAP actions, 13 are not related either to energy combustion or to carbon dioxide and, consequently, are not incorporated in the analysis.

The projections do not include carbon dioxide mitigation actions that may be enacted as a result of the Kyoto Protocol, which was agreed to on December 11, 1997, but has not been ratified, or other international agreements. The Bush Administration has announced that it does not intend to seek ratification by the United States Senate of the Kyoto agreement, effectively removing the United States from further participation in its provisions.

Comparison of Proposed House Energy Bill and Senate Amendments

The U.S. House of Representatives passed H.R. 4, The Securing America’s Future Energy (SAFE) Act of 2001, on August 2, 2001. In addition to addressing energy conservation, efficiency, and research and development, H.R. 4 encourages the development of domestic oil and gas resources, provides tax credits for alternative energy products, and requires an increase in average automobile fuel efficiency. The Senate amended the SAFE Act and on April 25, 2002, passed the Energy Policy Act of 2002.

Over the past year, EIA has analyzed several of the provisions included in the SAFE Act of 2001 at the request of members of Congress. The analysis reports can be found on the EIA web site at www.eia.doe.gov/bookshelf/services.html. The *Issues in Focus* section of this report also details the results of some of the analyses.

By extending the use of tax credits, deductions, and tax recovery periods and by liberalizing many of the definitions of current applicable laws, the Energy Policy Act of 2002 and corresponding Senate amendments attempt to amend the Internal Revenue Code

of 1986 and, specifically, to address energy conservation, energy reliability, and energy production. The following summary is a comparison of the House energy bill and Senate amendments. Some of the provisions discussed below have been changed since they were modeled for EIA’s analyses.

Conservation

Residential energy-efficient property credit

Section 3101 of the House energy bill proposes a 15-percent tax credit for the purchase of a qualified photovoltaic (PV) property and qualified solar water heating property that is used exclusively for purposes other than heating swimming pools and hot tubs. The credit would allow a maximum of \$2,000 per PV property or solar water heating property, with an effective date of December 31, 2001, for solar property purchased before January 1, 2007, and PV property purchased before January 1, 2009.

Section 2103 of the Senate energy bill proposes a 15-percent tax credit for qualified solar water heaters purchased by the taxpayer during the applicable year. It proposes a 30-percent credit for the purchase of a fuel cell property or a wind energy property; a maximum credit of \$2,000 is proposed for the latter purchase. The maximum credits for other purchases meeting specific efficiency targets in the bill are \$75 for a heat pump water heater or a natural gas water heater and \$250 for an electric heat pump, an advanced natural gas furnace, a qualifying central air conditioner, or a geothermal heat pump. The tax credit would be applicable for equipment purchased by the taxpayer during the tax year.

Credits for the installation of fuel cells

Section 3103 of the House bill proposes giving commercial and residential power generators a maximum tax credit of \$1,000 per kilowatt of capacity for stationary fuel cell power-producing equipment with an efficiency of at least 30 percent. The property would have to be placed in service between January 1, 2002, and December 31, 2006.

Section 2104 of the Senate amendment proposes providing taxpayers with tax credits worth 30 percent of basis (maximum \$500 per 0.5 kilowatt of capacity) for stationary fuel cell power plants that generate at least 0.5 kilowatts of electricity and have an efficiency of at least 30 percent. The property would have to be placed in service between December 31, 2002, and December 31, 2007. Alternatively, a taxpayer could receive tax credits worth either \$200 or 10 percent of the purchase cost of a stationary microturbine unit

Legislation and Regulations

with an electricity-only generating efficiency of at least 26 percent, based on International Standards Organization guidelines.

Alternative motor vehicle credit

Present law provides a maximum deduction for alternative motor vehicles of \$50,000 for a truck or van weighing over 26,000 pounds and \$2,000 for vehicles weighing 10,000 pounds or less. In addition, currently there is a 10-percent tax credit proposed for the cost of a qualified electric-run vehicle. The maximum amount of the credit is \$4,000. The deduction and credit would be phased out from January 1, 2004, until December 31, 2006, after which the incentives would no longer be valid.

Section 3104 of the House bill would extend the existing alternative motor vehicle deduction through December 31, 2007, and would begin phasing out this provision in 2005. The provision also would repeal an existing credit for electric fuel cell vehicles and provide credits for the purchase of fuel cell powered motor vehicles, hybrid motor vehicles, mixed-fuel motor vehicles, and advanced lean burn technology motor vehicles. Unused credits could be carried forward 20 years and would apply to non-fuel-cell powered equipment placed in service before 2008 and to fuel cell powered vehicles placed in service before 2012. Property placed in service after December 31, 2001, could receive the tax credit. Specifically, the following credits are proposed in the House bill:

- **Alternative fuel motor vehicle** credits would be valued at 50 percent of the incremental cost, represented by the difference between the actual and suggested retail price, of a dedicated alternative fuel motor vehicle. An additional 30-percent credit would be available if the vehicle met specified emissions standards. The limits on incremental cost would begin at \$5,000 for small vehicles and light trucks and continue up to \$40,000 for vehicles weighing over 26,000 pounds. Alternative fuels would include compressed natural gas, liquefied petroleum gas, hydrogen, and fuel consisting of at least 80 percent methanol.
- **Fuel cell motor vehicles** weighing between 8,500 and 26,000 pounds would receive credits of between \$4,000 and \$40,000.
- **Hybrid motor vehicle** credits would vary not only by vehicle weight but also by power available from the battery system. Auto and light truck purchases would qualify for a credit for battery power ranging from \$250 for 2.5 percent to \$1,000 for 30 percent. For vehicles weighing over 26,000

pounds, the credit would range from \$6,000 for a battery power of 20 percent to \$10,000 for a battery power of 60 percent. Additional credits would apply to vehicles and light trucks that meet the 2000 fuel economy performance standards (as opposed to 2000 model year standards).

- **Mixed fuel vehicles** are vehicles weighing more than 14,000 pounds that use either 75:25 or 95:5 mixtures of alternative fuel and petroleum-based fuel. Those using the mixture with a lower percentage of alternative fuel would receive 70 percent of the otherwise allowable alternative fuel motor vehicle credit. Those using the 95:5 ratio would receive 95 percent of the allowable alternative fuel motor vehicle credit.
- **Advanced lean burn technology motor vehicles** would have to exceed 2000 model year fuel economy performance standards to receive a credit that ranges from \$1,000 for fuel economy that is 125 percent of the year 2000 standard to \$3,500 for 250 percent. In addition, \$250 or \$500 credits for estimated lifetime fuel savings would be available. Property placed in service beginning January 1, 2002, would be eligible for the credits.

The provisions of the Senate amendments (Sections 2001 and 2010) are similar to those of the House bill. The Senate amendments would repeal the existing electric fuel vehicle purchase credit and extend the present-law deduction through 2007, or through 2011 for hydrogen-related property. Phaseout of a 25-percent non-hydrogen-related property credit would begin in 2004 and end in 2005, and a hydrogen-related property credit would be phased out from 2004 to 2009. Unused credits could be carried forward for 20 years and carried back for 3 years. The equipment would have to be placed in service before 2007 (2012 for fuel cell motor vehicles). Like the House provision, the Senate amendments would repeal the present-law credit for electric fuel cell vehicles.

- **Fuel cell motor vehicles** would receive the same treatment as under the proposed House provision.
- **Hybrid motor vehicle** credits would vary not only by vehicle but also by power available from the battery system. Auto and light truck purchases would qualify for a credit for battery power from \$250 for 4 percent to \$1,000 for 30 percent. For vehicles weighing between 10,000 and 14,000 pounds, the credit would range from \$1,000 for a battery power of 20 percent to \$2,500 for a battery

power of 60 percent. Additional credits would be available for vehicles and light trucks that exceed the 2000 fuel economy performance standards.

- **Alternative fuel motor vehicles** would be treated differently in the Senate version, in that the percentage allowed as the incremental cost of alternative fuel motor vehicles would be limited to 40 percent rather than 50 percent. Although the Senate supported a mixed fuel vehicle credit similar to that in the House bill, the Senate version does not include a provision that would allow a credit for Advanced Clean Coal Technology. It would also delay the effective date of implementation of the provision until September 30, 2002.
- **Mixed fuel vehicles** would receive the same treatment proposed in the House provision.

Extension of deduction for refueling property

Both the House bill (Section 3105) and the Senate bill (Section 2010) would extend the deduction for refueling property; however, the Senate would provide a 50-percent credit for costs associated with the installation of a clean-fuel vehicle refueling property. The credit would be limited to \$30,000 if the property were a retail clean-fuel vehicle refueling property. The credit limit on residential property would be \$1,000. In both cases, the property could not be placed in service after January 1, 2007, unless the refueling energy source were hydrogen, in which case the deadline would be January 1, 2012.

Modification of credit for electric vehicles

The proposed House bill (Section 3106) redefines eligibility for the credit for battery vehicles. The provision modifies the credit to vary by vehicle weight. Certain small vehicles would receive a credit of 10 percent of the manufacturer's retail price or \$4,000, whichever is less. Other small vehicles of 8,500 pounds or less might be eligible to receive \$4,000 or \$5,000 if certain performance and capacity criteria were met. Vehicles weighing over 8,500 but not over 14,000 pounds would be eligible to receive \$10,000. Owners of vehicles weighing more than 26,000 pounds could obtain a credit of \$40,000. This provision would become effective on January 1, 2002.

While the Senate provision (Section 2002) has many similarities to that of the House bill, the eligible maximum credits for certain small vehicles would be \$1,500 or 10 percent of the retail value of the vehicle. For vehicles weighing less than 8,500 pounds, the credit would range from \$3,500 to \$6,000. Unused credits could be carried forward 20 years and carried

back 3 years. Property placed in service after September 30, 2002, would be eligible for the credit.

Energy-efficient appliances credit

Section 3107 of the House bill proposes a \$50 production credit on clothes washers with minimum efficiency standards of at least 1.26 Modified Energy Factor (MEF) (as determined by the Secretary of Energy) or a refrigerator that consumes 10 percent less energy per year than the standards created by the U.S. Department of Energy (DOE). A clothes washer with an efficiency of at least 1.42 MEF effective on July 1, 2001, or a washer produced after January 1, 2004 with at least a 1.5 MEF would be eligible to receive a \$100 credit. A refrigerator that consumes 15 percent less than the DOE standards could also receive the \$100 credit. Section 2102 of the Senate amendments is similar to the Section 3107 provision of the House bill.

Credit for energy efficiency improvements to existing homes

Section 3108 of the House bill proposes a 20-percent tax credit, with a maximum of \$2,000, for homeowners with certain energy-efficient building envelope components meeting the 1998 International Energy Conservation Code (IECC) code. Improvements would have to be made between January 1, 2002, and December 31, 2007.

Section 2109 of the Senate amendments proposes a credit to qualified energy efficiency improvements up to a maximum credit of \$300 per household. Improvements would have to achieve a 30-percent reduction in energy consumption and be consistent with the 2000 IECC or, in the case of windows, would have to meet the Energy Star criteria or be certified as achieving a 30-percent reduction in energy use. Qualified improvements, which include insulation, exterior windows and doors, and skylights, would have to be installed after the date of the bill's enactment and before January 1, 2007.

Efficient new home credit

Section 3109 of the House bill would offer builders a maximum \$2,000 tax credit for any home that achieves 30-percent energy savings for heating and cooling relative to a home that meets the 1998 IECC. The Efficient New Home Credit would apply to homes substantially completed between January 1, 2002, and December 31, 2006. Section 2101 of the Senate amendments would offer builders a tax credit of \$1,250 tax credit for any home that achieves 30-percent energy savings for heating and cooling

Legislation and Regulations

relative to a home that meets the 2000 IECC and a \$1,250 tax credit for any home that achieves 50-percent energy savings for heating and cooling relative to a home that meets the 2000 IECC. Compliance for the credit could be component based or performance based. Homes available for the credit would have to be substantially completed after the date of enactment of the bill and before December 31, 2007.

Energy-efficient commercial buildings deduction

Section 3110 of the House bill would grant commercial building owners a maximum deduction of \$2.25 per square foot for expenditures on the building envelope, water heating, lighting, ventilation, or heating and cooling of the building. Credits would be effective from the date of enactment until January 2, 2007. Section 2105 of the Senate amendments is similar, with effective dates from September 30, 2002, through December 31, 2009.

Deduction for qualified new or retrofitted energy management devices

Section 3111 of the House bill would allow a maximum deduction of \$30 for each qualified energy management device, including a meter or metering device, used for managing a customer's daily use and purchase of electricity or natural gas. The provision would become effective on the date of its enactment. Section 2106 of the Senate amendments is similar to the House version.

Energy credit for combined heat and power system property

Section 3113 of the House bill would extend the current 10-percent business credit for solar power generation equipment. Qualifying equipment must have electrical capacity greater than 50 kilowatts or a mechanical energy capacity greater than 67 horsepower. The credit would be effective from December 31, 2002, through December 31, 2006. Section 2108 of the Senate amendments is similar to the House version.

Small ethanol producer credit

There is no provision in the House bill for changes to current laws. Section 2005 of the Senate bill would liberalize the definition of an eligible small producer to include a producer that does not exceed 60 million gallons and would permit a pass-through of the producer credit to a cooperative's patrons. The amendment would also liberalize the ordering and carry-forward/carry-back rules for small ethanol producers and would allow them to claim the credit against the alternative minimum tax.

Three-year applicable recovery period for depreciation of qualified water sub-metering devices

Section 3112 of the House bill would establish a 3-year recovery period for energy management devices put in service after the date of enactment of bill. Section 2111 of the Senate bill resembles the House version. It would add water sub-metering devices to applicable equipment devices.

Transfer of excise tax to the Highway Trust Fund

Section 2006 of the Senate bill would transfer 2.5 cents per gallon of the excise tax on gasoline from the General Fund to the Highway Trust Fund. The transfer would take effect on October 1, 2003.

Changes to income tax and excise tax rules governing the treatment of ETBE

Section 2007 of the Senate amendments would allow refiners blending gas and ethanol to accrue a credit equal to the amount of the alcohol fuels credit or excise tax rate reduction that would otherwise be available for fuel blended with ethyl tertiary butyl ether (ETBE). In addition, a refiner would be able to claim the credit against its excise liability rather than its income tax liability for motor fuels under Section 4081 of the Tax Code. Alternatively, the credit could be transferred to a registered position holder to offset that holder's excise tax liability. The provision would become effective on the date of enactment.

Income tax credit and excise tax rate reduction for biodiesel fuel mixtures

Section 2008 of the Senate amendments would allow taxpayers engaging in fuel production from biodiesel fuels from January 1, 2002, through December 31, 2006, to receive an income tax credit or an excise tax reduction. Those using recycled sources could receive a reduced income tax credit.

Tax credit for certain "power takeoff" vehicles

Section 2009 of the Senate amendments proposes a \$250 income tax credit to business owners of a highway vehicle operated for either transportation or nontransportation purposes using a single motor. The provision requires the Treasury to provide a method for exempting from the fuel excise tax the fuel used for non-transportation use. The provision would take effect on the date of enactment and expire on December 31, 2004.

Credit for production from a clean coal technology unit

Sections 2201 and 2221 of the Senate amendments propose a credit of 0.34 cent per kilowatthour for

electricity produced from units that have been retrofitted, repowered, and/or replaced with a clean coal technology within 10 years of the date of enactment. The effective date for the credit would be the date of the enactment of the provision.

Investment credit for advanced clean coal technologies

Section 3117 of the House bill includes a provision granting a 10-percent tax credit for qualified expenses for the construction of a power plant using advanced clean coal technologies, or the retrofitting or repowering of an existing conventional power plant with new advanced clean coal technologies. A total of no more than 6,500 megawatts could be placed in service before 2009, with additional limits by type of technology and an additional 1,000 megawatts before 2012. All investments would have to be made between January 1, 2002, and December 31, 2011.

Sections 2212 and 2221 of the Senate amendments have similar provisions. Not more than 2,000 megawatts of capacity may be placed in service before 2009 and an additional 2,000 megawatts before 2017. The credit would take effect on the date of enactment of the provision for capacity placed in service before January 1, 2017, or, in the case of advanced pulverized coal or atmospheric fluidized-bed combustion, before January 1, 2013.

Credit for production from advanced clean coal facilities

Section 3118 of the House bill proposes a production credit to power producers using qualified advanced clean coal technology facilities. The qualifying facility would be able to take the credit for a 10-year period that begins with the date that the qualifying facility is placed in service, with the amount for the first 5 years exceeding the amount for the second 5 years. Section 2212 of the Senate amendments is similar to the House version but uses different heat rate thresholds to qualify for the credit.

Energy Reliability

Treatment of natural gas gathering lines as 7-year property

Section 3201 of the House bill proposes a 7-year recovery period for natural gas gathering lines, as opposed to the current 15-year recovery period. It also would allow for alternative minimum tax relief by not adjusting the allowable amount of depreciation. The treatment would apply to property placed in service after the date of enactment. Section 2302 of the Senate bill does not allow for alternative minimum tax relief.

Recovery period for natural gas distribution

Section 3202 of the House bill proposes a 10-year recovery period for natural gas distribution lines, as opposed to the current 20-year recovery life available for taxpayers. The provision would allow alternative minimum tax relief by not adjusting the allowable amount of depreciation and would be effective for property placed in service after the date of enactment. Section 2311 of the Senate amendments proposes a 15-year tax life and does not allow for alternative minimum tax relief.

Treatment of petroleum refining property as 7-year property

Section 3203 of the House bill would change the current 10-year recovery period for refining property to 7 years. It would also provide no adjustment to the allowable amount of depreciation for purposes of computing income subject to the alternative minimum tax. Changes would apply to property placed in service after the date of enactment.

Expensing of capital costs incurred for production in complying with EPA sulfur regulations for small refiners

Section 3204 of the House bill would allow small refiners to deduct 75 percent of capital expenditure costs on the year of the expense for costs related to complying with the EPA's highway diesel fuel sulfur control requirements. The provision would apply to expenses paid or incurred after the date of enactment. Section 2303 of the Senate amendments is similar to the House version, except that it defines a small refiner somewhat differently.

Credit for small refiners for production of diesel fuel in compliance with the EPA sulfur regulations for small refiners

Section 3205 of the House bill proposes a 5-cent-per-gallon credit to small refiners of low-sulfur fuel for expenses incurred after the date of enactment. The total amount of the credit is limited to 25 percent of the capital costs incurred to reach compliance with the EPA diesel fuel regulations. Failure to reach compliance, change of ownership, or cessation of operations would cause the refiner to return the credit. Section 2304 of the Senate amendments is similar to the House version but reduces the credit amount, *pro rata*, for refiners producing in excess of 155,000 (but less than 205,000) barrels per day. In addition, the credit would have no recapture features and, in the case of cooperative organizations, could be apportioned to members.

Legislation and Regulations

Independent producer test change from daily runs to average daily runs

Section 3206 of the House bill would change the current definition of independent producer from 50,000 barrels per day to an average of 75,000 barrels per day, effective for production in taxable year 2002 and after. Section 2305 of the Senate amendments is similar to the House provision but would lower the production requirement to an average daily run of 60,000 barrels and would apply to production in taxable years after 2002.

Tax-exempt bonds for public power facilities

Section 3207 of the House bill would liberalize current rules on the ability of public power companies to use tax-exempt bonds to finance electric output property when participants engage in qualifying electric restructuring arrangements. This provision would allow power entities that engage in activities beyond those allowed under the liberalized private business use rules to elect to forgo certain future issuances of tax-exempt bonds for new generating capacity while preserving their tax-exempt status for other bonds. The provision would also alter existing rules concerning the issuance of tax-exempt bonds for the purchase of existing electric output facilities. The bill would be effective on the date of enactment. Sections 2401 and 2405 of the Senate amendments propose changes to current tax laws to conform with the new industry structure. On the date of enactment, the provision would allow modification to the amounts sold by qualified facilities without losing their “grandfathered” exception benefits.

Dispositions of transmission property to implement FERC restructuring policy

Section 3208 of the House bill would allow taxpayers greater flexibility in the treatment of the disposition of transmission property as an involuntary conversion by expanding the range of replacement property that qualifies as a related property (or similar in use) to converted electric transmission property. Section 2404 of the Senate amendments would allow the recognition of a gain from the disposition of electric transmission property over an 8-year period. As in the House provision, transactions occurring after the date of enactment would qualify for consideration.

Distribution of stock to implement FERC or State electric restructuring policy

Section 3209 of the House bill proposes an exception to Section 355(e) of the Tax Code for the acquisition of stock or assets of any controlled corporation during an electric transmission transaction.

Ongoing study and reports with regard to tax issues resulting from future restructuring decisions

Section 2401 of the Senate amendments would require that the Treasury Department study and analyze tax consequences resulting from the restructuring of the electric service industry. The series of reports would be presented to the Senate Committee on Finance and the House Ways and Means Committee. The first report would be due on December 31, 2002.

Special rules for nuclear decommissioning cost

Section 3210 of the House bill would repeal the cost-of-service requirement for deductible contributions to a qualified nuclear decommissioning fund. It would also allow qualified funds to accumulate an amount sufficient to pay for all decommissioning costs. The provision would permit contributions to qualified funds after the useful life of the nuclear power plant. In addition, there would be no recognition of gain or loss as a result of the transfer of a qualified fund in connection with the transfer of the power plant. The provision treats all nuclear decommissioning costs as deductible when paid and applies in taxable years after December 31, 2002. Section 2402 of the Senate amendments would not allow funds to accumulate an amount sufficient to pay for all decommissioning. The provision, which would apply in taxable years after December 31, 2002, would not permit funding after the useful life of the power plant.

Treatment of certain electric cooperatives

Section 3211 of the House bill would require that any income received or accrued from an “open access transaction” would not be included in determining whether or not a rural electric cooperative satisfies the 85-percent test for tax exemption under 501(c)(12) of the Tax Code. In addition, any income received or accrued by a rural electric cooperative from any nuclear decommissioning transaction would also be excluded from the 85-percent test. The provision specifies that income received or accrued from a “load loss transaction” be treated under 501(c)(12) as income collected by members for the sole purpose of covering losses and expenses related to providing service to its members. It would also provide that similar rules apply to the receipt or accrual of income from load loss transactions of taxable electric utilities. Its effective date would be the first taxable year after the date of enactment.

Sections 2403 and 2406 of the Senate amendments are similar to the House provision. Income from some asset exchange or conversion transactions would be excluded in determining whether a rural electric cooperative satisfies the 85-percent test for tax exemption under 501(c)(12). In addition, cancellation from indebtedness income from discounted prepayments of loans, debts, or obligations made, insured, or guaranteed by the Federal Government under the Rural Electrification Act of 1936 would be excluded in determining whether a rural electric cooperative satisfies the 85-percent test. Income received or accrued indirectly from a member by a rural electric cooperative from any "open access transaction" would be treated as member income in determining whether the cooperative satisfies the 85-percent test. Income received before 2007 for the construction of line extensions to facilitate the development of Section 29 qualified nonconventional fuel sources would be excluded in determining whether a rural electric cooperative satisfies the 85-percent test. The provision would take effect in the first taxable year after the date of enactment.

Energy Production

Marginal wells credit

Section 3301 of the House bill proposes a tax credit of \$3 per barrel for the production of crude oil and \$0.50 per thousand cubic feet for the production of qualified natural gas from marginal wells. The credit, which would be unavailable if the reference price of oil or natural gas exceeded \$18 or \$2, respectively, would become effective in taxable years after 2001 and would be reduced proportionately given the following cases: (1) the price of oil falls between \$15 and \$18, or (2) the price of gas falls between \$1.67 and \$2. Section 2301 of the Senate bill is the same as Section 3301 of the House bill but begins in the first taxable year after the date of enactment.

Net income limitation on percentage depletion for oil and gas property and suspension of limitation based on 65 percent of taxable years

Section 3302 of the House bill would suspend the 65-percent taxable income limitation for taxable years between January 1, 2002, and January 1, 2007, and extend the suspension of the 100-percent net income limitation for marginal wells for an additional 5 years. Section 2306 of the Senate amendments would also suspend the 100-percent net income limitation for marginal wells. Both the House and Senate provisions would be effective for taxable years after 2001.

Delay rental payments

Section 3303 of the House bill proposes a deduction for rental payments in lieu of royalty payments in the year paid or incurred, beginning in taxable years after 2001. Section 2308 of the Senate amendments would allow for a prospective 2-year amortization on the rental payments, starting in the first taxable year after 2002.

Geological and geographical costs

Section 3304 of the House bill would allow geological and geophysical costs incurred in domestic oil and gas exploration in taxable years after 2001 to be deducted in the year paid or incurred. Section 2307 of the Senate amendments includes a prospective 2-year amortization period for costs paid or incurred in taxable years after 2002.

Five-year carryback for net operating losses from oil and gas properties

Section 3305 of the House bill proposes a 5-year carry-back period for eligible oil and gas losses incurred in taxable years after 2001.

Extension and expansion of credit for producing fuel from an unconventional source

Section 3306 of H.R. 4 proposes a credit for the production of certain unconventional fuels produced at wells placed in service after the date of enactment and before January 1, 2007. The credit would be worth \$3 per barrel for production from 2001 through 2002 and would be indexed for inflation beginning with the credit amount for 2003. Any production occurring after December 31, 2009, or exceeding 200,000 barrels (or cubic equivalent) would be excluded from the credit. The bill would also allow producers to claim a credit equal to the newly re-indexed value of \$3 per barrel for production from certain existing wells between 2003 and 2006. The provision would allow landfill gas to be sold to a third party from facilities placed in service after June 30, 1998, and before January 1, 2007. The taxpayer could claim 5 years of credit beginning with the later of (1) the date of enactment or (2) the first day of operation of facility.

Section 2309 of the Senate amendments would permit an un-indexed credit of \$3 per barrel of oil equivalent for the production of certain nonconventional fuels produced at wells placed in service after the date of enactment and before January 1, 2005 (3 years). This provision would also extend the present-law credit through December 31, 2004, for production from existing facilities producing coke, coke gas, or natural gas and byproducts produced by coal gasification from

Legislation and Regulations

lignite. In addition, it would permit credit for the production of “refined coal” from facilities placed in service after the date of enactment and before January 1, 2007. This type of coal, which would be required to meet emissions reduction targets, would have a market value 50 percent higher than feedstock coal.

The Senate amendments would also extend the credit for the production of “viscous oil” from facilities placed in service after the date of enactment and before January 1, 2005, as well as for coal mine methane gas captured or extracted from a coal mine and sold after the date of enactment and before January 1, 2005. Credits for the production of liquid, gaseous, or solid fuels produced from agricultural and animal wastes would be available for facilities placed in service after the date of enactment and before January 1, 2005. The credit is valued at \$3 per barrel of oil equivalent, un-indexed, for 5 years of production commencing when the facility is placed in service. The Senate would direct the Treasury to study the effect of the credit on coalbed methane.

Business credits against the alternative minimum tax

Section 3307 of the House bill proposes relief from the alternative minimum tax to some businesses. The credits would include energy-efficient appliance credits, new energy-efficient home construction credits, environmental tax credits, marginal well oil and gas production credits, and credits for production from qualifying advanced clean coal technology. Sections 2005(b)(3) and 2503(c) of the Senate amendments would permit the Alaska natural gas credit and the small ethanol producer credit to be claimed against the entire regular tax and the alternative minimum tax.

Intangible drilling costs

Section 3308 of the House bill would remove the existing alternative minimum tax preference for intangible drilling costs of independent producers for taxable years 2002 through 2004.

Enhanced oil recovery credit

Section 3309 of the House bill would allow the enhanced oil recovery credit to be taken against the alternative minimum tax.

Accelerated depreciation and wage credit benefits for businesses on Indian reservations

Section 3310 of the House bill would extend the current accelerated depreciation incentive until December 31, 2006. This extension would apply to property whose purpose is the transmission or refining of oil or

natural gas, including operations related to the generation or transmission of electricity, belonging to a gas or oil well, or used for the production of any qualified fuel. The provision would also extend the Indian employment credit incentive through December 31, 2006, as long as the credit is used for wages paid for energy-related services performed at a facility for any of the activities listed above. Section 2501 of the Senate amendments would extend the wage credit and accelerated depreciation incentives through December 31, 2005, for all types of businesses.

Arbitrage rules not to apply to prepayments for natural gas

Section 3213 of the House bill states that the arbitrage rules would not apply when at least 85 percent of a natural gas purchase is used by Governmental utilities in the State where the issuer of the bonds is located. In addition, the provision would be less restrictive on the limits it places on customers and on the use of swap transactions. The 85-percent limit would apply to bonds issued after the date of enactment.

GAO study of effectiveness of alternative motor vehicles and fuel incentives

Section 2502 of the Senate amendments would require the U.S. General Accounting Office (GAO) to study the effectiveness of alternative motor vehicle and fuel incentives and conservation and energy efficiency incentives. The provision calls for a comparison of revenue cost to energy conserved and environmental benefits received. The study, which would encompass an examination of the distribution of incentive beneficiaries, is to provide an annual report beginning no later than December 31, 2002.

Credit for production of Alaskan natural gas

Section 2503 of the Senate amendments would provide a tax credit for Alaskan natural gas when the average monthly price exceeds \$3.25 per million Btu at the Alberta, Canada, pipeline hub. If the price at the hub exceeds \$4.875 (indexed for inflation), any prior credits can be recaptured. The credit could be claimed on the later of (1) January 1, 2010, or (2) the initial date of the interstate transportation of the Alaskan natural gas. The credit, which would take effect upon enactment, could be claimed against regular and minimum tax.

Sale of gasoline and diesel fuel at duty-free sales enterprises

The Senate amendments would change Title 19, Section 1555(b), of the U.S. Tax Code to treat gasoline

sold from a duty-free enterprise as goods not for export.

Expanded exemption from aviation fuels excise taxes for aerial applicators

Section 2506 of the Senate amendments would expand the exception from aviation fuels excise taxes for crop dusters to include fuel used between farms and airfields and would grant the aerial applicator the exclusive right to the refund. The amendment would affect aerial applicators from 2001 through 2003.

Regional Transmission Organizations and Market Design

The FERC has taken 3 measures over the past 6 years to address discriminatory transmission practices. Such practices include the potential of a utility to use the transmission system it owns to prevent the transmission of energy from competing generation or unfairly charging for the transmission service. The latest FERC measure, moreover, addresses the problem of inconsistent market design and administration through transmission service contracts, wholesale markets (such as day-ahead and real-time markets), congestion pricing methodology, capacity requirement, transmission ownership, price hedging tools, and interconnection charges.

The first measure was implemented in FERC Orders 888 and 889, issued in 1996. The FERC mandated that utilities open their transmission systems to competing power providers on a nondiscriminatory basis and provide an Open Access Same-Time Information System (OASIS). The purpose of an OASIS is to level the playing field by making the same transmission information, such as available transmission capacity, available at the same time for all market participants. Nevertheless, the FERC felt that transmission-owning utilities still found ways to discriminate against competing generators.

The FERC also decided that engineering and economic inefficiencies were inherent in current operation systems because of a lack of regional coordination of an interconnected grid. The Commission called for the formation of Regional Transmission Organizations (RTOs), which were to improve grid reliability and market performance, remove opportunities for discriminatory practices, and provide for less regulation. Improved market performance would include regional transmission pricing, improved congestion management, more accurate calculations for total transmission capability and available transmission capability, better management of parallel path

flows (i.e., when electricity flows along multiple paths to its destination), lower transactions costs, and State retail access programs [1].

In the second measure, the FERC declared in Order 2000 that, in order to accomplish its goals, an RTO must satisfy four characteristics: independence, scope and regional configuration, operational authority, and short-term reliability. Furthermore, the RTO must perform eight functions: tariff design and administration, congestion management, parallel path flow, ancillary services, OASIS management and calculation of total and available transmission capability, market monitoring, planning and expansion, and interregional coordination. Utilities were to join and have operational RTOs by December 2001.

The implementation of Order 2000 has been slow, however, and only one functioning RTO, the Midwest Independent System Operator (MISO), has been formed to date. This has been due in part to unclear rules concerning the formation, structure, and operation of an RTO and unclear rules regarding market design. Market participants have been reluctant to commit to something they feel is ill defined, and those willing to commit have struggled to reconcile their business interests with the ideal proposed by the FERC. Consequently, the FERC began a series of discussions, conferences, and working groups to gather feedback and input from the industry. Those efforts resulted in the third measure, the Standard Market Design (SMD) Notice of Proposed Rulemaking (NOPR) issued on July 31, 2002. The RTO remains the cornerstone of the FERC plan to eliminate transmission discrimination and market inefficiencies in the SMD and puts forth the design as a “cookbook” for a well-functioning wholesale market.

The FERC has listed the following as objectives of its SMD proposal [2]:

- Establish a single flexible transmission network access service, with a single open-access transmission tariff that applies to all wholesale and retail transmission customers
- Require that transmission be operated by an independent entity and that public utilities operating imbalance energy markets and transmission systems be independent of market participants
- Adopt location marginal pricing (LMP)—a market-based method for congestion management—and provide tradable financial rights (congestion revenue rights) as a means to lock in a fixed price for transmission

Legislation and Regulations

- Facilitate real-time and day-ahead markets
- Establish procedures to monitor and mitigate market power
- Facilitate competitive markets by establishing procedures to assure, on a long-term regional basis, that markets will develop adequate transmission, generation, and demand-side resources
- Establish an access charge to recover embedded transmission costs that would be a demand charge billed on a customer's load ratio share of the transmission provider's costs and would be paid by any entity taking power off the grid
- Require that customers receive the same level and quality of service under the SMD that they receive under their current contracts, to the greatest extent feasible
- Adopt a new transmission pricing policy
- Provide for fair treatment of transmission capacity reserved for reliability
- Create a formal role for State representatives to participate in the decisionmaking processes of RTOs or other regional security and reliability entities
- More explicitly state in the *pro forma* tariff the obligations of transmission providers to comply with all appropriate standards for ensuring system security and reliability.

The SMD would be implemented in two stages. The first stage would require all public utilities that own, operate, or control interstate transmission facilities to place all customers, including bundled retail customers, under their open-access transmission tariffs. The second stage would implement the new market design and revised open access transmission tariff (the SMD Tariff). The Commission takes the approach of providing incentives through the market design for industry entities to join an RTO. The SMD also proposes penalties, such as a loss of market-based rates, for those that do not join an RTO. Furthermore, those that do not join an RTO must contract with an independent entity to operate their transmission facilities. The Commission proposes that the Interim Tariff must be filed by July 31, 2003, to become effective by September 30, 2004. The SMD Tariff would be filed by December 1, 2003, to become effective no later than September 30, 2004.

The SMD proposal has been controversial. Although 23 States have endorsed the FERC's effort to eliminate transmission system discrimination in order to create a truly competitive bulk power market [3],

other States are decidedly against the plan and the perceived usurpation of their authority by the Federal Government. Many western and southeastern States with relatively cheap power are worried that being forced to participate in a large competitive electricity market will raise the price of power for their consumers. They are concerned that sales to States with more expensive power will deplete their cheap power resources, and that their customers will be forced to pay for new transmission lines to benefit the residents of other States. It is unclear to them how the market would work in regions with large Federal Power Authorities and other public power utilities if those utilities were not required to participate in the RTO.

Because this is only a proposed ruling, no measures were taken to account for it in *AEO2003*. The States that oppose the FERC's SMD proposal are calling for more regional cost-benefit analyses and asking the FERC to address their regional issues before any market design regulations are implemented. Furthermore, members of the U.S. House of Representatives have submitted draft legislation that could strip the FERC of its authority to require utilities to join an RTO. In addition, the FERC has recently issued two new NOPRs for the implementation of interconnection standards for large and small generators, designed to work in tandem with the SMD rulemaking to improve the operation of competitive bulk wholesale electricity markets.

Extension of Wind and Biomass Production Tax Credits

The Renewable Energy Production Tax Credit (PTC) was first established by the 1992 EPACT. The PTC is an inflation-indexed tax credit given to qualifying wind and biomass energy facilities for the first 10 years after the facility is commissioned. The tax credit was originally set at 1.5 cents for every kilowatthour sold from a qualifying facility and has gradually been adjusted for inflation, to the current level of 1.8 cents per kilowatthour sold. A qualifying facility must have been commissioned after the law's enactment in 1992 and before the law's current expiration date. The law was allowed to expire briefly in 1999 but was extended retroactively to December 31, 2001, when it was allowed to expire again. In March 2002, the PTC was, once again, retroactively extended (to December 31, 2003) by the Job Creation and Worker Assistance Act of 2002 (P.L. 107-147).

The tax credit applies to all wind power facilities owned by a tax-paying entity and to all tax-paying biomass power facilities that use either a closed-loop or

poultry waste fuel source. (A biomass fuel source is considered “closed loop” if it is planted specifically for use in energy production and is not a waste or surplus product from some other activity.) For non-tax-paying entities, such as municipal electric utilities, a separate provision, the Renewable Energy Production Incentive (REPI), provides a direct payment based on annual energy production. Although designed to be comparable with the PTC, the exact level of the REPI is contingent on annual appropriations from Congress, and it is considered a less certain subsidy than the PTC.

The value of the PTC is reduced if the facility owner also receives certain types of State or local financial incentives, such as initial-cost buydowns or investment tax credits. Wind and biomass facilities, as well as other renewable energy facilities, also benefit from an accelerated capital cost depreciation schedule of 5 years. *AEO2003* incorporates the original PTC and all extensions by providing the tax credit, as well as the 5-year depreciation allowance, to all new wind capacity construction through 2003. Because all new capacity additions are assumed to be owned by tax-paying entities, the REPI is not explicitly represented.

Further extension of the PTC to 2007 is included in both the House and Senate versions of the Energy Policy Act of 2002. The House version would expand eligibility for the credit to facilities using landfill gas and certain “open-loop” biomass fuels, including agricultural residue and landscaping trimmings. The Senate version would include those facilities and would also expand eligibility to additional agricultural animal wastes and to geothermal and solar facilities. The Senate version would further allow assignment of the credit by non-tax-paying entities to certain tax-paying entities. Because they have not been signed into law, none of the provisions in the House or Senate bills is considered in the *AEO2003* reference case.

Energy Provisions in 2002 Farm Bill

Several sections of the Farm Security and Rural Investment Act of 2002 (P.L. 107-171), signed by President Bush on May 13, 2002, have energy market implications. Under the Rural Development title, loans and loan guarantees for rural purchases of solar energy systems are extended to purchases of other renewable energy systems, such as wind generators and anaerobic digesters [4]. The Research and Related Matters title authorizes the Agriculture Secretary to grant up to \$20 million to colleges, universities, and Federal laboratories for research on

production of alcohol, diesel fuel, and other industrial hydrocarbons from agricultural and forest products. The grants are authorized through 2007, and at least half the money must go to alcohol research. Funding for carbon cycle research, which originated under the Agricultural Risk Protection Act of 2000 (P.L. 106-224), is also extended through 2007 [5].

The Forest Land Enhancement Program is established in a section of the Forestry title. One of its goals is to increase and enhance carbon sequestration in forests. Funding for the Office of International Forestry, which was originated by the Global Climate Change Prevention Act of 1990 (P.L. 101-624, Title XXIV), is extended through 2007 [6].

Title IX of the Farm Security and Rural Investment Act deals directly with energy issues. Development grants are available to cover up to 30 percent of the cost of a biorefinery. Biorefinery products can include fuels, chemicals, and/or electricity. Grants are offered for biodiesel fuel education. Several sections are intended to help rural businesses become more energy efficient and to use alternative sources of energy. Audits of rural businesses to provide recommendations to improve energy efficiency and to use renewable energy are eligible for grants for up to 75 percent of cost. If a rural business wishes to upgrade its energy systems, the Department of Agriculture may offer loans, loan guarantees, and/or grants. A grant cannot be more than 25 percent of project cost, and the total of grants and loans cannot be more than 50 percent of project cost. Interest on a loan is to equal the prevailing Treasury security rate. The Agriculture and Energy Secretaries are to cooperate on developing and promoting rural applications of hydrogen and fuel cell technology. In addition to the biorefinery grants, another section of Title IX makes more funding available for biomass research and development. The EPA is directed to coordinate research on carbon flux in soil and plants and exchange of other greenhouse gases due to agriculture [7].

Section 9002 requires Federal agencies to give purchasing preference to biobased products. Biobased products must be available in reasonable time and at a reasonable price and must meet applicable performance requirements. The rules apply to purchases of products with a total value of \$10,000 or more per fiscal year. It does not apply to motor vehicle fuel or electricity.

Section 9010 extends the Commodity Credit Corporation (CCC) bioenergy program through 2006. This program, established in 2000, awards subsidies based

Legislation and Regulations

on feedstock prices for new or expanded ethanol or biodiesel production. In 2001, the CCC paid out \$32.7 million for 141.7 million gallons of ethanol production and \$7.9 million for 6.4 million gallons of biodiesel production. Through the third quarter of 2002, the CCC had paid \$40 million for 146.5 million gallons of ethanol and \$7.5 million for 5.7 million gallons of biodiesel [8]. The total subsidy is limited to \$150 million per year.

The extension of the CCC bioenergy program is likely to have the largest impact because of its funding level and structure. The program rewards expanded production of ethanol from grain and biodiesel from vegetable oil or animal fats. All of these are known commercial technologies. The grants and loan programs for biomass fuels research and for biorefineries are likely to aid the development of cellulose ethanol technology, which is still a pilot technology. It is expected that cellulose ethanol will not be marketed in large quantities until after 2010. The carbon cycle research and forestry programs do not have a direct effect on energy production, but the results of those initiatives may help to shape the Nation's climate change policy.

Emissions Standards for Non-road Engines

In October 1998, the EPA finalized new emissions standards for mobile non-road diesel compression-ignition (CI) engines used in a wide range of non-road construction, agricultural, and industrial equipment and some marine applications, including bulldozers, tractors, forklifts, and sailboat auxiliary propulsion units [9]. The Tier 2 engine standards are based on horsepower rating and are to be phased in from 2001 to 2006. The standards are applicable to all engine sizes and require on average a 30-percent reduction in emissions of nitrogen oxides (NO_x) and nonmethane hydrocarbons (NMHCs) from the existing Tier 1 standards. Yet more stringent Tier 3 standards for engines rated over 50 horsepower take effect from 2006 to 2008, requiring on average a 40-percent reduction in emissions of NO_x and NMHCs from Tier 2 standards. The Tier 3 standards are expected to lead to implementation of control technologies similar to those that will be used by manufacturers of heavy-duty engines to comply with the 2004 heavy vehicle engine standards. The final rule applies to all new equipment built after the start date for an engine category (1999 to 2008, depending on the category) and does not apply to existing non-road equipment.

In addition to standards for land-based non-road engines, the EPA adopted similar emissions standards for marine diesel engines in December 1999 [10]. These standards take effect between 2004 and 2007, depending on the size of the engine. The final rule will reduce emissions of NO_x and particulate matter (PM) from new marine diesel engines rated over 50 horsepower, which are used for propulsion and auxiliary power on commercial vessels in a variety of marine applications, including fishing boats, tug and towboats, dredgers, coastal and Great Lakes cargo vessels, and oceangoing vessels. Standards for marine engines under 50 horsepower were established in the October 1998 ruling.

In April 1998, the EPA finalized emissions standards for NO_x, hydrocarbons (HC), carbon monoxide (CO), PM, and smoke for newly manufactured and remanufactured locomotive engines [11]. Under the final ruling, three separate sets of emission standards have been adopted. The first set of standards applies to remanufactured locomotives originally manufactured between 1973 and 2001; the second set applies to locomotives manufactured from 2002 to 2004; and the final set applies to locomotives manufactured in 2005 and beyond. The new standards are expected to achieve approximately a two-thirds reduction in NO_x emissions and a 50-percent reduction in emissions of HC and PM.

In September 2002, the EPA established emissions standards for several types of previously unregulated non-road engines and vehicles [12]. The standards apply to large industrial spark-ignition (SI) engines rated over 25 horsepower, non-road recreational vehicles such as snowmobiles and all-terrain vehicles (ATVs), and recreational marine diesel engines over 50 horsepower used in yachts and cruisers. The new standards, to be phased in from 2004 to 2009, will limit emissions of NO_x, HC, and CO from the affected engines. Manufacturers will be required to apply existing engine technologies, such as modified two-stroke engine technology, changing from two-stroke to four-stroke engine technology, or improved diesel combustion and aftercooling. When the standards are fully implemented, reductions of 72 percent in HC emissions, 80 percent in NO_x emissions, and 56 percent in CO emissions from the affected engines are expected by 2020.

The effects of the EPA's new non-road vehicle emissions standards are not represented in *AEO2003* because of uncertainties about the types of pollution control technologies to be implemented and their

associated impacts on new vehicle efficiency. Several pollution control technologies are currently used to manage emissions in heavy-duty highway vehicles, including exhaust gas recirculation, ignition timing, and injection timing retard. These technologies are expected to be adopted by diesel engine manufacturers to meet non-road emission standards. It is unclear at this time which technologies will be implemented and what the overall impact will be on energy use by non-road vehicles.

California Renewable Portfolio Standard

On September 12, 2002, Governor Gray Davis signed California Senate Bill (S.B.) 1078, establishing a State renewable portfolio standard (RPS) effective January 1, 2003. California's RPS requires its three investor-owned electric utilities (IOUs) to increase their share of renewables from approximately 10 percent today by at least 1 percent a year, until renewables equal 20 percent of retail sales, to be achieved no later than 2017. Overall, the baseline is composed of renewables under contract to IOUs in 2001, including small hydropower (30 megawatts or less) and nonthermal uses of municipal solid waste. Eligible renewables for the RPS increases are biomass, digester gas, and nonthermal municipal solid waste conversion; fuel cells using renewable energy sources; geothermal; landfill gas; ocean thermal; ocean tidal and ocean wave; photovoltaics; solar thermal electric; small hydropower that does not require increased water diversion; and wind power. There is a clear preference for renewable energy sources obtained in the State. The cost difference between the more expensive renewables and least-cost alternatives will be paid by ratepayers from public goods charges included in retail electricity rates.

It is unclear at this time which and how many additional renewable generating facilities will result from California's newly enacted RPS, and when the facilities will be built. California has not yet estimated the expected renewable energy additions under its RPS. Moreover, the IOUs are excused from meeting the RPS until the California Public Utility Commission declares them creditworthy—an important qualification given the bankruptcy and financial challenges facing the utilities today. Further, the RPS is effective only to the extent that public goods charges can meet

the higher cost of renewables. Finally, S.B. 1078 is a supplement to California's already existing renewables mandate, A.B. 1890, which remains in force. The *AEO2003* projections considered both S.B. 1078 and A.B. 1890.

California Carbon Standard for Light-Duty Vehicles

In July 2002, California Assembly Bill (A.B.) 1493 was signed into law. The bill requires that the California Air Resources Board (CARB) develop and adopt, by January 1, 2005, a maximum feasible carbon pollution standard for light-duty vehicles. In estimating the feasibility of the standard, the CARB is required to consider cost-effectiveness, technological capability, economic impacts, and flexibility for manufacturers in meeting the requirement. The standard will apply to light-duty noncommercial passenger vehicles manufactured for model year 2009 and beyond. The bill does not mandate the sale of any specific technology and, in addition, prohibits the use of the following as options for carbon reduction: mandatory trip reduction; land use restrictions; additional fees and/or taxes on any motor vehicle, fuel, or vehicle miles traveled; a ban on any vehicle category; a reduction in vehicle weight; or a limitation or reduction on the speed limit on any street or highway in the State. Consequently, A.B. 1493 will rely heavily on vehicle efficiency improvement or a switch to low-carbon fuels to achieve the carbon emission standard.

If it is determined that low-carbon alternative fuels are not a feasible solution, A.B. 1493 will become in effect a fuel economy standard, which is facing considerable opposition from the auto industry. Current suits filed against California's Low Emission Vehicle Program (LEVP) state that the program attempts to preempt the Federal Government's authority to set fuel economy standards. The Bush Administration endorses the auto industry's argument and has filed a brief in the United States Court of Appeals stating that the Federal Government holds exclusive jurisdiction in the regulation of fuel economy standards. If the fuel economy stipulations outlined in the LEVP are overturned, it is likely that those proposed for A.B. 1493 will also be overturned. Given the opposition in the courts, the A.B. 1493 carbon pollution standard is not represented in *AEO2003*.