Text Notes

Legislation and Regulations

[*1*] The tax of 4.3 cents per gallon is in nominal terms.

[*2*] Most of the information on State legislation and regulation comes from Energy Information Administration, "Status of State Electric Industry Restructuring Activity, September 2001," web site www.eia.doe.gov/ /electricity/chg_str/tab5rev.html. Other information comes from individual State legislation and utility commission documents and from C.H. Guernsey & Company, "Electric Restructuring Links," web site www.chguernsey.com/frame-index1c.html.

[*3*] The concept of net metering is to allow the electric meters of customers with generating facilities to turn backward when their generators are producing more energy than they use. Net metering allows customers to use their generation to offset their consumption over the entire billing period, not just instantaneously.

[*4*] U.S. Environmental Protection Agency, "Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements: Final Rule," *Federal Register*, 40 CFR Parts 69, 80, and 86 (January 18, 2001).

[*5*] Energy Information Administration, *The Transition to Ultra-Low-Sulfur Diesel Fuel: Effects on Prices and Supply*, SR/OIAF/2001-01 (Washington, DC, May 2001), web site www.eia.doe.gov/oiaf/servicerpt/ulsd/index.html.

[*6*] State of California Air Resources Board, *Staff Report: Proposed Regulations for Low Emission Vehicles and Clean Fuels* (Sacramento, CA, August 13, 1990).

[*7*] State of California Air Resources Board, Mobile Source Control Division, *Staff Report: Initial Statement of Reasons, Proposed Amendments to California Exhaust and Evaporative Emissions Standards and Test Procedures for Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles—"LEV II" and Proposed Amendments to California Motor Vehicle Certification, Assembly-Line and In-Use Test Requirements—"CAP 2000"* (El Monte, CA, September 18, 1998).

[*8*] State of California Air Resources Board, Resolution 01-1 (January 25, 2001).

[*9*] *National Energy Policy: A Report of the National Energy Policy Development Group* (May 2001), web site www.whitehouse.gov/energy/National-Energy-Policy.pdf

[*10*] Energy Information Administration, *U.S. Natural Gas Markets: Recent Trends and Prospects for the Future*, SR/OIAF/2001-02 (Washington, DC, May 2001), web site www.eia.doe.gov/oiaf/servicerpt/naturalgas/pdf/oiaf00102.pdf.

[*11*] Energy Information Administration, *U.S. Natural Gas Markets: Mid-Term Prospects for Natural Gas Supply*, SR/OIAF/2001-06 (Washington, DC, December 2001), web site www.eia.doe.gov/oiaf/servicerpt/naturalgas/pdf/oiaf00106.pdf.

[*12*] President William J. Clinton and Vice President Albert Gore, Jr., *The Climate Change Action Plan* (Washington, DC, October 1993).

[*13*] Carbon dioxide is absorbed by growing vegetation and soils. Defining the total impacts of CCAP as net reductions accounts for the increased sequestration of carbon dioxide as a result of the forestry and land-use actions in the program.

[*14*] Australia, Austria, Belarus, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, European Union, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom of Great Britain and Northern Ireland, and United States of America. Turkey is an Annex I nation that has not ratified the Framework Convention and did not commit to quantifiable emissions targets.

[*15*] Antigua and Barbuda, Argentina, Azerbaijan, Bahamas, Bangladesh, Barbados, Bolivia, Burundi, Cook Islands, Cyprus, Ecuador, El Salvador, Equatorial Guinea, Fiji, Gambia, Georgia, Guatemala, Guinea, Honduras, Jamaica, Kiribati, Lesotho, Malawi, the Maldives, Mauritius, Mexico, Micronesia, Mongolia, Nauru, Nicaragua, Niue, Palau, Panama, Paraguay, Romania, Samoa, Senegal, Trinidad and Tobago, Turkmenistan, Tuvalu, Uruguay, Vanuatu, and Uzbekistan.

[*16*] Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2000*, DOE/EIA-0573(2000) (Washington, DC, November 2001), web site www.eia.doe.gov//1605/ggrpt/.

[*17*] Hydrofluorocarbons (HFCs) are non-ozone-depleting substitutes for chlorofluorocarbons (CFCs); perfluorocarbons (PFCs) are byproducts of aluminum production and are also used in semiconductor manufacturing; and sulfur hexafluoride (SF_6) is used as an insulator in electrical equipment and in semiconductor manufacturing.

[*18*] Web site www.state.gov/www/global/global_issues/climate/fs-9911_bonn_climate_conf.html.

[*19*] Web site http://cop6.unfccc.int/media/press.html.

[*20*] "U.N. Conference Fails to Reach Accord on Global Warming," *New York Times* (November 26, 2000).

[*21*] "Odd Culprits in Collapse of Climate Talks," *New York Times* (November 28, 2000).

[*22*] Pew Center on Global Climate Change, "Climate Talks in Marrakech—COP 7: Update, November 9, 2001—Final Analysis, web site www.pewclimate.org/cop7/update_110901.cfm.

[*23*] United Nations Framework Convention on Climate Change,"Governments Ready To Ratify Kyoto Protocol," Press Release (November 10, 2001), web site http://unfccc.int/press/prel2001/pressrel101101.pdf.

[*24*] Remarks by President Bush on Global Climate Change, Office of the Press Secretary, The White House (June 11, 2001).

Issues in Focus

[*25*] The marginal cost is the cost to produce one more unit of the good or service.

[*26*] The marginal benefit is the benefit received by purchasing one more unit of a particular good or service.

[*27*] Some supporters of regulation also believe that increased electricity supply must be carefully regulated to protect the environment. They thus justify the prolonged amount of time needed to build new generation as a result of environmental permitting regulations, which in a competitive market will hamper the ability of supply to respond to demand price signals.

[*28*] High-pollutant diesel reciprocating engines can be converted to lower polluting gas engines at a low cost when necessary to meet emissions standards. Fuel cells are also considered a cost-effective choice when reliability is considered essential and meeting strict emissions standards are necessary.

[*29*] A line-item competitive transition charge (CTC) was added to the distribution charge portion of the bill of each electricity customer to pay for stranded costs.

[*30*] Although customers would normally pay for all utility investments under a regulated system, they would have paid them off over the lifetime (according to financing guidelines) of the plant, lowering the price per kilowatthour of generation.

[*31*] Energy Information Administration, "Electricity Shortage in California: Issues for Petroleum and Natural Gas Supply, 2. Electricity Reliability Issues in California, A Summary," web site www.eia.doe.gov/ emeu/ steo/ pub/ special/ california/ june01article/ caelec.html.

[*32*] Energy Information Administration, "Electricity Shortage in California: Issues for Petroleum and Natural Gas Supply, 2. Electricity Reliability Issues in California, A Summary," web site www.eia.doe. gov/ emeu/ steo/ pub/ special/ california/ june01article/ caelec.html.

[*33*] M. Warwick, Pacific National Laboratories, "The New California Power Market: How it Works, What Went Wrong, What Next," presentation to the U.S. Department of Transportation, Bureau of Transportation Statistics (November 7, 2000).

[*34*] When actual reserves fall below 7 percent, a Stage 1 Alert is triggered; below 5 percent a Stage 2 Alert is triggered; and below 1.5 percent, Stage 3.

[*35*] When a customer purchases electricity from a competitive supplier that offers a lower generation rate than the utility default generation rate, the account of the customer is credited for the savings, which are called "shopping credits."

[*36*] California Energy Commission, *Annual Project Activity Report to the Legislature* (Sacramento, CA, December 2000).

[*37*] California Energy Commission, *California Energy Outlook: Volume I. Electricity and Natural Gas Trends Report*, Publication 200-01-002, Staff Draft (Sacramento, CA**,** September 7, 2001), pp. 62-64.

[*38*] California Energy Commission for the Public Interest Energy Research (PIER) Program, *Five-Year Investment Plan, 2002 Through 2006, Volume 1*, Report to the California Legislature (Sacramento, CA, March 1, 2001).

[*39*] California Energy Commission for the Public Interest Energy Research (PIER) Program, *Five-Year Investment Plan, 2002 Through 2006, Volume 1*, Report to the California Legislature (Sacramento, CA, March 1, 2001). For example, 80 percent of requests for new capacity additions for 2001-2003 in Santa Clara City are to accommodate internet load growth.

[*40*] Capacity retirements were greater than capacity additions during this period. See web site www.eia.doe.gov/cneaf/electricity/california/background.html.

[*41*] Web site www.eia.doe.gov/cneaf/electricity/california/background.html.

[*42*] Web site www.eia.doe.gov/cneaf/electricity/california/background.html.

[*43*] The effect of high natural gas prices on California's electricity market is discussed below. When natural gas production is curtailed, it takes 6 to 18 months for it to be restarted.

[*44*] Web site www.eia.doe.gov/cneaf/electricity/california/background.html.

[*45*] Congestion occurs when too much power is transmitted through wires with limited capacity, causing a blockage and slowing or stopping the flow of energy through that blocked point.

[*46*] Federal Energy Regulatory Commission, U.S. Department of Energy, et al., Docket No. ER98-2843-008, *Order On Rehearing, Directing Compliance Filing, Granting Clarification, and Accepting Compliance Filing* (January 14, 2000).

[*47*] W.W. Hogan, "Coordination for Competition: Electricity Market Design Principles," presentation to Public Utility Commission of Texas Workshop on ERCOT Protocols (February 15, 2001).

[*48*] Federal Energy Regulatory Commission, *Staff Report to the Federal Energy Regulatory Commission on Western Markets and the Causes of the Summer 2000 Price Abnormalities* (Washington, DC, November 1, 2000).

[*49*] Web site www.eia.doe.gov/cneaf/electricity/california/ background.html.

[*50*] Federal Energy Regulatory Commission, *San Diego Gas & Electric Company v. Sellers of Energy and Ancillary Service Into Markets Operated by the California Independent System Operator Corporation and the California Power Exchange* (various proceedings throughout 2001).

[*51*] Letter from Pat Wood, III to Bill Massey, Linda Breathitt, and Nora Brownell, Open Meeting, Item E-3, Docket No. EX01-3, *Discussion of RTO Progress* (September 26, 2001).

[*52*] A "market center" is a physical location on the transmission system where many transmission pipelines interconnect, giving buyers and sellers considerable flexibility in transporting gas from many different production regions to many geographically diverse consumption centers.

[*53*] California electricity prices are given in 2000 dollars to show changes in the price projections from *AEO2001* to *AEO2002* and comparisons over the forecast period in real terms.

[*54*] Energy Information Administration, *Electricity Shortage in California: Issues for Petroleum and*

Natural Gas, Chapter 6, "Natural Gas," web site www. eia. doe. gov/ emeu/ steo/ pub/ special/ california/ june01article/canatgas.html.

[*55*] Downstream Alternatives, Inc., *The Use of Ethanol in California Clean Burning Gasoline: Ethanol Supply and Demand* (Bremen, IN, February 5, 1999).

[*56*] Maine has passed legislation that sets a goal of phasing out MTBE.

[*57*] Bills introduced in the 107th Congress included: S.265, H.R. 454, H.R. 608, H.R. 20, H.R. 2230, S. 950, S.892, H.R. 1999, H.R. 1696, S. 670, H.R. 2587, and H.R. 4.

[*58*] AEO2001 National Energy Modeling System, runs OMBREF.D081301A, TRGM0O2R.D081301A, and TRGM0O0Z.D081601C.

[*59*] Because power companies accumulated (banked) emissions allowances during Phase I of the program (1995 to 1999), the Phase II cap of 8.95 million tons per year will not become binding until the banked allowances have been exhausted.

[*60*] In the 107th Congress this subcommittee has been renamed the Subcommittee on Energy Policy, Natural Resources and Regulatory Affairs.

[*61*] Energy Information Administration, *Analysis of Strategies for Reducing Multiple Emissions from Electric Power Plants: Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, and Mercury and a Renewable Portfolio Standard*, SR/OIAF/2001-03 (Washington, DC, July 2001), web site www.eia.doe.gov/oiaf/servicerpt/epp/index. html.

[*62*] Energy Information Administration, *Reducing Emissions of Sulfur Dioxide, Nitrogen Oxides, and Mercury from Electric Power Plants,* SR/OIAF/2001-04 (Washington, DC, September 2001), web site www.eia.doe.gov/oiaf/servicerpt/mepp/pdf/sroiaf(2001)04.pdf.

[*63*] Energy Information Administration, *Analysis of Strategies for Reducing Emissions from Electric Power Plants with Advanced Technology Scenarios*, SR/OIAF/2001-05 (Washington, DC, October 2001), web site www.eia.doe.gov/oiaf/servicerpt/eppats/pdf/sroiaf(2001)05.pdf.

[*64*] Numerous policy instruments are available, including taxes, maximum achievable control technology (MACT), no-cost allowance allocation with cap and trade, allowance auction with cap and trade, and generation performance standard (GPS) allowance allocation with cap and trade. Each of the options would have different price and cost impacts.

[*65*] One case prepared for this analysis assumed that emissions allowances would be treated as having zero value in regions where electricity prices continue to be based on cost of service rather than competitive pricing.

[*66*] In the early years of the forecast, electricity prices are projected to be higher in the case that combines an RPS with caps on NO_x, SO_2, and Hg emissions than in the case that includes only the four emission caps.

[*67*] Retail electricity prices are assumed to be determined competitively in regions where most of the States have passed legislation or issued regulatory orders to deregulate their electricity sectors. In other regions, retail electricity prices are assumed to continue to be based on cost of service pricing.

[*68*] Cogenerators currently account for approximately 8 percent of total generation, with approximately two-thirds being generated from natural gas.

[*69*] Emission leakage occurs when control programs in a covered sector lead to actions that increase emissions in a sector not covered by the program.

[*70*] Interlaboratory Working Group, *Scenarios for a Clean Energy Future,* ORNL/CON-476 and LBNL-44029 (Oak Ridge National Laboratory, Oak Ridge, TN, and Lawrence Berkeley National Laboratory, Berkeley, CA, November 2000), web site www.ornl.gov/ORNL/Energy_Eff/CEFOnep.pdf.

[*71*] The ratio of energy service output to energy input is a typical measure of energy efficiency. For a thorough discussion of the issues involved in measuring efficiency, see Energy Information Administration, *Measuring Energy Efficiency in the United States' Economy: A Beginning*, DOE/EIA-0555(95)/2 (Washington, DC, October 1995); and E. Burns and S. Battles, "United States Energy Usage and Efficiency: Measuring Changes Over Time," presentation to the 17th Congress of the World Energy Council (Houston, TX, September 14, 1998).

[*72*] This assumption is bolstered by the increasing popularity of sport utility vehicles despite their higher prices. Possible differences between the transportation services provided by light trucks and those provided by cars include increased safety in collisions with smaller vehicles, better view of the road, four-wheel drive capability, and larger cargo capacity.

[*73*] The use of separate combinations of end use and fuel type removes the effects of fuel switching from the efficiency calculations. For example, a home heated with a natural gas furnace consumes more energy on site than does a home heated with an electric heat pump. If space heating were not delineated by fuel, a situation akin to the light-duty vehicle issue described above could arise. That is, a shift from electric heat to gas heat over time would be measured as an efficiency loss.

[*74*] The index used to construct the ACEI is the Tornqvist index (also referred to as the Discrete Divisia index). It is somewhat different from the CPI indexing procedure, using the average of base period and current period weights applied to percentage changes computed logarithmically. This index has a number of attractive theoretical features and is often used when data availability is not a constraint. For more information see W.E. Diewert, "Exact and Superlative Index Numbers," *Journal of Econometrics*, Vol. 4 (1976), pp. 115-145; and B.M. Balk and W.E. Diewert, "A Characterization of the Tornqvist Price Index, Discussion Paper No. 00-16, The University of British Columbia (October 2000).

Market Trends

[*75*] Based on DRI-WEFA, Simulation T250701 (July 2001).

[*76*] I. Ismail, "Future Growth in OPEC Oil Production Capacity and the Impact of Environmental Measures," presented to the Sixth Meeting of the International Energy Workshop (Vienna, Austria, June 1993).

[77] The transportation sector has been left out of these calculations because levels of transportation sector electricity use have historically been far less than 1 percent of delivered electricity. In the transportation sector, the difference between total and delivered energy consumption is also less than 1 percent.

[78] The high and low macroeconomic growth cases are linked to higher and lower population growth, respectively, which affects energy use in all sectors.

[79] The definition of the commercial sector for *AEO2002* is based on data from the 1995 Commercial Buildings Energy Consumption Survey (CBECS). See Energy Information Administration, 1995 CBECS Micro-Data Files (February 17, 1998), web site www.eia.doe.gov/emeu/cbecs/. Nonsampling and sampling errors (found in any statistical sample survey) and a change in the target building population resulted in a lower commercial floorspace estimate than found with the previous CBECS. In addition, 1995 CBECS energy intensities for specific end uses varied from earlier estimates, providing a different composition of end-use consumption. These factors contribute to the pattern of commercial energy use projected for *AEO2002*. Energy consumption data from the 1999 CBECS were not available at the time of publication. Further discussion is provided in Appendix G.

[80] The intensities shown were disaggregated using the divisia index. The divisia index is a weighted sum of growth rates and is separated into a sectoral shift or "output" effect and an energy efficiency or "substitution" effect. It has at least two properties that make it superior to other indexes. First, it is not sensitive to where in the time period or in which direction the index is computed. Second, when the effects are separated, the individual components have the same magnitude, regardless of which is calculated first. See Energy Information Administration, "Structural Shift and Aggregate Energy Efficiency in Manufacturing" (unpublished working paper in support of the National Energy Strategy, May 1990); and Boyd et al., "Separating the Changing Effects of U.S. Manufacturing Production from Energy Efficiency Improvements," *Energy Journal*, Vol. 8, No. 2 (1987).

[81] Estimated as consumption of alternative transportation fuels in crude oil Btu equivalence.

[82] Small light trucks (compact pickup trucks and compact vans) are used primarily as passenger vehicles, whereas medium light trucks (compact utility trucks and standard vans) and large light trucks (standard utility trucks and standard pickup trucks) are used more heavily for commercial purposes.

[83] U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, *Scenarios of U.S. Carbon Reductions: Potential Impacts of Energy Technologies by 2010 and Beyond*, ORNL/CON-444 (Washington, DC, September 1997); J. DeCicco and M. Ross, *An Updated Assessment of the Near-Term Potential for Improving Automotive Fuel Economy* (Washington, DC: American Council for an Energy-Efficient Economy, November 1993); and A. Vyas, C. Saricks, and F. Stodolsky, R. Cuenca, *Projected Effect of Future Energy Efficiency and Emissions Improving Technologies on Fuel Consumption of Heavy Trucks* (Argonne, IL: Argonne National Laboratory, 2001).

[84] Values for incremental investments and energy expenditure savings are discounted back to 2001 at a 7-percent real discount rate.

[85] Unless otherwise noted, the term "capacity" in the discussion of electricity generation indicates utility, nonutility, and cogenerator capacity.

[86] *AEO2002* does not include off-grid photovoltaics (PV). EIA estimates that another 76 megawatts of remote electricity generation PV applications were in service in 1999, plus an additional 205 megawatts in communications, transportation, and assorted other non-grid-connected, specialized applications. See *Annual Energy Review 2000,* Table 10.6. Remote electric generation means electricity generated for general application that does not interact with the electrical distribution system, such as at isolated residential sites. Other off-grid PV end uses include electricity generation but only for application-specific uses, such as remote water pumping and highway safety signs.

[87] Hydroelectric and landfill gas assumptions are unchanged from the reference case. Assumptions are obtained or derived from the Electric Power Research Institute and DOE, Office of Energy Efficiency and Renewable Energy, *Renewable Energy Technology Characterizations*, EPRI-TR-109496 (Washington, DC, December 1997), web site www.eren.doe.gov/power/techchar.html.

[88] Because the reference case assumes current law, the *AEO2002* projections exclude 382 megawatts of additional post-2001 wind capacity planned for Colorado, Montana, New York, and Pennsylvania because it is dependent upon extension of the Federal 1.7-cents-per-kilowatthour production tax credit, currently scheduled to expire December 31, 2001.

[89] Enhanced oil recovery (EOR) is the additional extraction of oil from a reservoir beyond what would be produced by primary and secondary (water flooding) recovery methods and involves the injection of heated fluids, pressured gases, or special chemicals into the oil reservoir. Because EOR oil production is considerably more expensive than primary and secondary oil recovery techniques, the deployment of EOR technology is particularly sensitive to prevailing crude oil prices.

[90] Energy Information Administration, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001).

[91] Total labor costs are estimated by multiplying the average hourly earnings of coal mine production workers by total annual labor hours worked. Average hourly earnings do not represent total labor costs per hour for the employer, because they exclude retroactive payments and irregular bonuses, employee benefits, and the employer's share of payroll taxes.

[92] Variations in mining costs are not necessarily limited to changes in labor productivity and wage rates. Other factors that affect mining costs and, subsequently, the price of coal include such items as severance taxes, royalties, fuel costs, and the costs of parts and supplies.

[93] U.S. Environmental Protection Agency, web site www.epa.gov/acidrain/overview.html (September 1997).

[*94*] Buildings: Energy Information Administration (EIA), *Technology Forecast Updates—Residential and Commercial Building Technologies—Advanced Adoption Case* (Arthur D. Little, Inc., October 2001). Industrial: EIA, *Industrial Model: Update on Energy Use and Industrial Characteristics* (Arthur D. Little, Inc., September 2001). Transportation: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, *Scenarios of U.S. Carbon Reductions: Potential Impacts of Energy Technologies by 2010 and Beyond*, ORNL/CON-444 (Washington, DC, September 1997); J. DeCicco and M. Ross, *An Updated Assessment of the Near-Term Potential for Improving Automotive Fuel Economy* (Washington, DC: American Council for an Energy-Efficient Economy, November 1993); and A. Vyas, C. Saricks, and F. Stodolsky, *Projected Effect of Future Energy Efficiency and Emissions Improving Technologies on Fuel Consumption of Heavy Trucks* (Argonne, IL: Argonne National Laboratory, 2001). Fossil-fired generating technologies: U.S. Department of Energy, Office of Fossil Energy. Renewable Generating Technologies: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, and Electric Power Research Institute, *Renewable Energy Technology Characterizations*, EPRI-TR-109496 (Washington, DC, December 1997).

Table Notes and Sources

Note: Tables indicated as sources in these notes refer to the tables in Appendixes A, B, and C of this report.

Table 1. Summary of results for five cases: Tables A1, A19, A20, B1, B19, B20, C1, C19, and C20.

Table 2. Effective dates of appliance efficiency standards, 1988-2007: Office of Integrated Analysis and Forecasting.

Table 3. Key results for the electricity generation sector in the House analysis, 2010 and 2020: Energy Information Administration, *Analysis of Strategies for Reducing Multiple Emissions from Electric Power Plants: Sulfur Dioxide, Nitrogen Oxides, Carbon Dioxide, and Mercury and a Renewable Portfolio Standard*, SR/OIAF/2001-03 (Washington, DC, July 2001), web site www.eia.doe.gov/oiaf/ servicerpt/epp/index.html.

Table 4. Key results for the electricity generation sector in the Smith-Voinovich-Brownback analysis without holding carbon dioxide emissions to 2008 levels, 2010 and 2020: Energy Information Administration, *Reducing Emissions of Sulfur Dioxide, Nitrogen Oxides, and Mercury from Electric Power Plants*, SR/OIAF/2001-04 (Washington, DC, September 2001), web site www. eia. doe. gov/ oiaf/ servicerpt/ mepp/ pdf/ sroiaf (2001) 04.pdf.

Table 5. Key results for the electricity generation sector in the Smith-Voinovich-Brownback analysis holding carbon dioxide emissions to 2008 levels, 2020: Energy Information Administration, *Reducing Emissions of Sulfur Dioxide, Nitrogen Oxides, and Mercury from Electric Power Plants*, SR/OIAF/2001-04 (Washington, DC, September 2001), web site www.eia.doe.gov/ oiaf/servicerpt/mepp/pdf/sroiaf(2001)04.pdf.

Table 6. Key results for the electricity generation sector in the Jeffords-Lieberman analysis, reference and advanced technology cases, 2010 and 2020: Energy Information Administration, *Analysis of Strategies for Reducing Emissions from Electric Power Plants with Advanced Technology Scenarios*, SR/OIAF/2001-05 (Washington, DC, October 2001), web site www.doe.gov/oiaf/servicerpt/eppats/pdf/sroiaf(2001)05.pdf.

Table 7. Key results for the electricity generation sector in the Jeffords-Lieberman analysis, CEF-JL moderate and advanced technology cases, 2010 and 2020: Energy Information Administration, *Analysis of Strategies for Reducing Emissions from Electric Power Plants with Advanced Technology Scenarios*, SR/OIAF/2001-05 (Washington, DC, October 2001), web site www.eia.doe.gov/servicerpt/eppats/pdf/sroiaf(2001)05.pdf.

Table 8. New car and light truck horsepower ratings and market shares, 1990-2020: History: U.S. Department of Transportation, National Highway Traffic Safety Administration. **Projections:** AEO2002 National Energy Modeling System, run AEO2002.D102001B.

Table 9. Costs of producing electricity from new plants, 2005 and 2020: AEO2002 National Energy Modeling System, run AEO2002.D102001B.

Table 10. Technically recoverable U.S. natural gas resources as of January 1, 2000: Energy Information Administration, Office of Integrated Analysis and Forecasting. Note: The values shown in the table differ from those shown in the comparable table (Table 14) in *AEO2001*. The differences result from: (1) an accounting of net reserve additions and production in 1999, (2) the use of a more refined method to estimate the share of resources in areas where drilling is officially prohibited, (3) new estimates of offshore resources from the Minerals Management Service, and (4) elimination of a double-counting error for lower 48 associated-dissolved gas undiscovered resources in the *AEO2001* table (but not in the *AEO2001* model resource inputs).

Table 11. Lower 48 natural gas drilling in three cases, 2000-2020: AEO2002 National Energy Modeling System, runs AEO2002.D102001B, LM2002.D102001B, and HM2002. D102001B.

Table 12. Crude oil drilling in three cases, 2000-2020: AEO2002 National Energy Modeling System, runs AEO2002.D102001B, LW2002.D102001B, and HW2002. D102001B.

Table 13. Technically recoverable U.S. crude oil resources as of January 1, 2000: Energy Information Administration, Office of Integrated Analysis and Forecasting. Note: The values shown in the table differ from those shown in the comparable table (Table 14) in *AEO2001*. The differences result from: (1) an accounting of net reserve additions and production in 1999, (2) the use of a more refined method to estimate the share of resources in areas where drilling is officially prohibited, (3) new estimates of offshore resources from the Minerals Management Service, and (4) exclusion of natural gas liquids, which were erroneously included in the *AEO2001* table (but not in the *AEO2001* model resource inputs).

Table 14. Crude oil production from Gulf of Mexico offshore, 2000-2020: AEO2002 National Energy Modeling System, run AEO2002.D102001B.

Table 15. Petroleum consumption and net imports in five cases, 2000 and 2020: 2000: Energy Information Administration, *Petroleum Supply Annual 2000*, Vol. 1, DOE/EIA-0340(2000)/1 (Washington, DC, June 2001). **Projections:** Tables A11, B11, and C11.

Table 16. Forecasts of economic growth, 2000-2020: *AEO2002*: Table B20. DRI-WEFA: Simulation T250701 (July 2001).

Table 17. Forecasts of world oil prices, 2000-2020: *AEO2002*: Tables A1 and C1. **DRI-WEFA:** DRI-WEFA, *U.S. Energy Outlook* (Spring/Summer 2001). **IEA:** International Energy Agency, *World Energy Outlook 2000*. **PEL:** Petroleum Economics, Ltd., *Oil and Energy Outlook to 2015* (June 2001). PIRA: PIRA Energy Group, "Retainer Client Seminar" (October 2001). **GRI:** Gas Research Institute, *GRI Baseline Projection of U.S. Energy Supply and Demand to 2020*, 2001 Edition (March 2001). **NRCan:** Natural Resources Canada, *Canada's Energy Outlook 1996-2020* (January 2000). **DBAB:** Deutsche Banc Alex.Brown, World Oil Supply and Demand Estimates (July 2001).

Table 18. Forecasts of average annual growth rates for energy consumption: History: Energy Information Administration, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). ***AEO2002*:** Table A2. **DRI-WEFA:** DRI-WEFA, *U.S. Energy Outlook* (Spring/Summer 2001). **GRI:** Gas Research Institute, *GRI Baseline Projection of U.S. Energy Supply and Demand to 2020*, 2001 Edition (March 2001). **Note:** Delivered energy includes petroleum, natural gas, coal, and electricity (excluding generation and transmission losses) consumed in the residential, commercial, industrial, and transportation sectors.

Table 19. Forecasts of average annual growth in residential and commercial energy demand: History: Energy Information Administration, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). ***AEO2002*:** Table A2. **DRI-WEFA:** DRI-WEFA, *U.S. Energy Outlook* (Spring/Summer 2001). **GRI:** Gas Research Institute, *GRI Baseline Projection of U.S. Energy Supply and Demand to 2020*, 2001 Edition (March 2001).

Table 20. Forecasts of average annual growth in industrial energy demand: History: Energy Information Administration, *Annual Energy Review 2000*, DOE/EIA-0384(2000) (Washington, DC, August 2001). ***AEO2002*:** Table A2. **DRI-WEFA:** DRI-WEFA, *U.S. Energy Outlook* (Spring/Summer 2001). **GRI:** Gas Research Institute, *GRI Baseline Projection of U.S. Energy Supply and Demand to 2020*, 2001 Edition (March 2001).

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