

Appendix F

Summary of Changes Since the *State Energy Data Report 1999*

Revisions to consumption data contained in the State Energy Data System (SEDS) and incorporated in this edition of the **State Energy Data** tables are summarized in this appendix. The html and comma-separated-value (csv) formatted files on the State data web site contain data for all 41 years in the system, from 1960 through 2000. The pdf formatted tables contain data for selected years due to page size constraints. The information in this appendix covers all years from 1960 through 1999.

Coal

All Sectors, 1960 through 1999. Changes in the methodology for estimating total coal consumption led to revisions to coal data for all years. Previously, anthracite and bituminous coal (including lignite) consumption were estimated separately for each sector and State based on distribution data, then summed to obtain total coal consumption. This breakout is no longer available and data series for total coal are used to estimate the sector and State consumption.

To be consistent, this approach also was applied to previous years, leading to the potential for small rounding differences in all States and years. The new methodology has less effect on the estimates for 1980 forward when distribution data were replaced by State-level consumption data. Some small revisions occurred from 1980 through 1985 due to the use of anthracite and bituminous breakouts that were not rounded where previously they were. These revisions do not appear in the pdf format tables due to

the level of rounding; however, these adjustments will be apparent in the csv format files, which contain full-precision data with five decimal places.

In 1999, a correction in the estimates of withheld residential/commercial coal consumption in Alabama, Arkansas, Nevada, and Oregon caused small adjustments (at the decimal place level) for the other sectors and other States' estimates.

Residential and Commercial Sectors, 1960 through 1999. Coal consumed by the residential and commercial sectors is reported to the EIA for the two sectors combined. In the past, the percent EIA allocated to each sector was the same each year -- the residential share was 60 percent of the anthracite, and 35 percent of the bituminous and lignite. In this edition, the methodology changed to use percentages for these shares that vary from year to year. The new percentages are calculated for total coal instead of separately for anthracite and bituminous. These changes are described in the Technical Notes under coal (see "Data Sources for Coal," CLRCSUS).

The consumption estimate revisions were the smallest during 1972 and 1973, when the revised percentage was closest to the original percentage. In terms of quantity, the new methodology had the greatest impact on States with the largest quantities of combined residential and commercial consumption, such as Illinois, Ohio, Wyoming and Michigan. In terms of percentage change, the impact was the same for all States that consume only bituminous coal and lignite (no anthracite).

For example, U.S. residential consumption estimates decreased by as much as 72 percent in 1997 and 1998, and increased by as much as 45 percent in 1962. The smallest revision was a four percent increase in 1972. Revisions to the commercial sector were close to the absolute value of revisions in the residential sector. There were slight differences in the residential and commercial sector because of other factors impacting the estimates described in the section above on "all sectors."

Industrial Sector, 1989 through 1999. Revisions to consumption occurred due to additional data on coal consumed to generate electricity by power producers other than electric utilities ("other power producers"). This information previously was not available by State and not reflected in SEDS. Both State and U.S. Industrial sector totals were affected. On a national level, revisions ranged from 5,301.3 thousand short tons in 1989 -- a five percent increase, to 46,061.4 thousand short tons in 1999 -- a 49 percent increase. The States most affected by the additional data were Alaska, California, Colorado, Connecticut, Florida, Hawaii, Illinois (in 1999), Kentucky, Maine, Massachusetts, Montana, North Carolina, Nebraska (in 1999), New Jersey, Nevada, New York (in 1999), Oklahoma, Pennsylvania and Virginia.

Transportation Sector, 1960-1999. Revisions to coal consumed by the transportation sector occurred due to changes in the estimation methodology. Previously, State consumption was based on the State distribution of bituminous and lignite coal to the industrial sector. The new methodology uses total coal distributed to the industrial sector, including anthracite. The largest revisions occurred in States with larger proportions of industrial anthracite use. Generally, the revisions were by less than one thousand short tons, or less than four percent of the previous transportation sector estimate.

Conversion Factors, 1960 through 1999. From 1960 through 1997, conversion factors were calculated by sector as the consumption-weighted average of national-level anthracite conversion factors and State-level bituminous coal and lignite factors using data from SEDS. From 1998 forward, conversion factors are based on the average heat content of total coal received by sector. Changes in data processing procedures to accommodate using a combined conversion factor may have led to some differences in earlier years due to rounding. Also, conversion factors for sector and U.S. totals that are derived from the summation of State physical units

versus the summation of State Btu values may show some slight adjustments due to revisions in either of these components.

Electricity Imports and Exports

Electric Utility, 1989. Changes to hydroelectric exports in 1989 in several States led to revisions in U.S. net imports of electricity (EXNIP). Electricity produced from non-renewable sources and exported from the U.S. increased by the same amounts that hydroelectricity exports decreased -- from 15,135 MMkWh to 3,878 MMkWh (a decrease of 11,257 MMkWh). Net imports of electricity decreased by the same amount, from 6,429 MMkWh to a negative 4,828 MMkWh (indicating exports were higher than imports).

Natural Gas

Residential Sector, 1999. Residential natural gas consumption was revised in the source publication, EIA, *Historical Natural Gas Annual 1930 Through 2000*, Table 16, http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/historical_natural_gas_annual/hnga_historical.html. Only one State was revised -- Tennessee -- by 1,528 thousand cubic feet (Mcf). This caused estimated U.S. residential natural gas consumption to increase 3 percent, to 4,725,672 Mcf.

Commercial Sector, 1999. Natural gas consumption in the commercial sector in 1999 was revised in the source publication, EIA, *Historical Natural Gas Annual 1930 Through 2000*, Table 16, http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/historical_natural_gas_annual/hnga_historical.html. Consumption was revised in 11 States causing the U.S. total to decrease by 4,175 Mcf, or by less than 0.2 percent. The largest revisions were a 7 percent decrease (4,190 Mcf) in Colorado and a 2 percent increase (1,194 Mcf) in Tennessee.

Industrial Sector, 1999. The industrial sector includes natural gas consumed by lease plants (NGLEP), in addition to natural gas delivered to the industrial sector (NGINP). Revisions were made to each of these areas in the source publication http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/historical_natural_gas_annual/hnga_historical.html, Table 16. Increases in nine States caused revisions to industrial sector

deliveries of 15,657 Mcf. Most of the increase occurred in three States: Colorado (4,189 Mcf), Kentucky (4,936 Mcf) and Tennessee (5,378 Mcf). Lease plant consumption was revised in two States -- a decrease of 1,824 Mcf in Louisiana and an increase of 3,649 Mcf in Pennsylvania. The net impact on U.S. lease plant consumption was an increase of 1,825 Mcf. The changes in lease plant and other industrial consumption caused total U.S. industrial consumption to increase by 17,482 Mcf, to 10,084,867 Mcf.

Transportation Sector, 1999. Changes in the transportation sector reflect revisions to natural gas consumed as pipeline fuel (NGPZP) by the source. U.S. natural gas consumed as pipeline fuel was revised downward by -89,759 Mcf. Most of this reflects revisions to Illinois (-42,700 Mcf) and Mississippi (-32,000 Mcf).

Conversion Factors, 1999. The revisions described above led to changes in total natural gas consumption (NGTCP), which is used to derive the factor for converting natural gas used by all sectors other than electric utilities from physical units to Btu (NGNUK). These revisions were slight and most likely due to rounding differences, since changes in NGTCP also would be reflected in NGTCB (the formula for NGNUK is NGTCB - NGEUB/ NGTCP - NGEUP). Only three States were affected (Kentucky, Mississippi and North Carolina). The overall impact on the U.S. was .00001 Mcf.

Nuclear Electric Power

Industrial Sector, 1989 through 1999. Electricity generated from nuclear power by nonutility power producers was revised in the EIA Annual Energy Review 2001, http://www.eia.doe.gov/emeu/aer/pdf/pages/sec_h_1.pdf, based on data collected on Form EIA-867, "Annual Nonutility Power Producers Report" and the Form EIA-860B, "Annual Electric Generator Report-Nonutility." For the years 1989 through 1998, U.S. totals were revised to zero, where activity had previously been reported. In 1999, U.S. totals increased by 56 million kilowatt hours (MMkWh), or 1.8 percent. Most of the increase was in Massachusetts (45 MMkWh), followed by Illinois (7 MMkWh) and Pennsylvania (4 MMkWh).

Conversion Factors, 1985 through 1999. The factor for converting electricity produced from nuclear power from physical units to British thermal units (NUEOKUS) was revised in the source publication, the EIA Annual Energy Review 2001, <http://www.eia.doe.gov/emeu/aer/pdf/pages/sec13.pdf>, based on heat rates reported on Form EIA-860, "Annual Electric Generator Report" and generation reported on Form EIA-906, "Power Plant Report" (and predecessor forms). The largest decrease was 3.1 percent in 1987, and the smallest was 0.92 percent in 1990. Values for NUEOKUS can be found in Appendix B.

Renewables

Geothermal

Industrial Sector, 1989 through 1999. Geothermal energy used by nonutility power producers to generate electricity was revised in the EIA Annual Energy Review 2001, http://www.eia.doe.gov/emeu/aer/pdf/pages/sec_h_1.pdf, based on data collected on Form EIA-867, "Annual Nonutility Power Producers Report" and the Form EIA-860B, "Annual Electric Generator Report-Nonutility." This led to revisions in estimated U.S. geothermal industrial consumption ranging from an increase of 157 million kilowatt hours (MMkWh) in 1997 to a decrease of 1,986 MMkWh in 1999. Most of the decrease was for California. For example, in 1999 California decreased 1,887 MMkWh. Two States were revised to zero -- Illinois and 1991, and New Hampshire in 1999.

Hydroelectric

Hydroelectricity Imports and Exports, 1989. Corrections were made to reflect changes to hydroelectricity imports and exports from Canada and Mexico made previously in the EIA Annual Energy Review 2000. All States were revised to zero with the exception of Washington, which was revised to 5,465 million kilowatt hours (MMkWh), an increase of 1,587 MMkWh. This change would appear in the column called "Hydroelectric Power" on the tables entitled "Estimates of Energy Input at Electric Utilities" -- these trade estimates are added to the electric utilities' hydroelectric generation shown here. The following States were affected: Arizona, California, Maine, Michigan, Minnesota, Montana, North Dakota, New

York, Texas, and Vermont. The effect on the U.S. was a decrease of 9,670 MMkWh to 5,465 MMkWh.

Conversion Factors, 1997 through 1999. The factor used for converting kilowatt hours generated through the consumption of hydroelectricity to British thermal units was revised in the source publication, the EIA Annual Energy Review 2001, <http://www.eia.doe.gov/emeu/aer/pdf/pages/sec13.pdf>, based on heat rates reported on Form EIA-860, “Annual Electric Generator Report” and generation reported on EIA-Form 906, “Power Plant Report” (and predecessor forms). This factor, the U.S. average heat content of fossil fuels consumed at steam-electric power plants (FFEOKUS), decreased in all three years, by 1.2 to 1.4 percent. Values for FFEOKUS can be found in Appendix B.

Solar

Residential/Commercial Sector, 1992, 1996 through 1999. U.S. energy produced by solar thermal and photovoltaic energy collectors for the residential and commercial sectors combined (SOHCBUS) was revised by the source, the EIA Annual Energy Review. The impact was less than one percent in any given year, with decreases in all years except for 1999, which showed an increase of 0.4 percent. Changes to estimated State residential/commercial use of solar energy ranged from an average decrease of 280 thousand Btus in South Dakota to 52 billion Btus in Florida (1992 through 1998). For 1999, the increase ranged from 540 thousand Btus in South Dakota to 134 billion Btus in Florida. Revisions to 1999 volumes were also affected by a revision to the adjustment for removing high-temperature solar thermal collectors in shipments of solar energy collectors in California.

Industrial Sector, 1989 through 1999. Solar energy used by nonutility power producers to generate electricity was revised in the EIA Annual Energy Review 2001, http://www.eia.doe.gov/emeu/aer/pdf/pages/sec_h_1.pdf, based on data collected on Form EIA-867, “Annual Nonutility Power Producers Report” and the Form EIA-860B, “Annual Electric Generator Report–Nonutility.” These revisions cause the California and U.S. total industrial solar generation to be decreased by 60 percent in 1989 to 42 percent in 1999. Revisions ranged between 38 and 41 percent between 1990 and 1998.

Electric Utilities, 1997 through 1999. Although there are no revisions to electricity generated from solar energy at electric utilities, the factor used for converting kilowatt hours to British thermal units was revised in the source publication, the EIA Annual Energy Review 2001, <http://www.eia.doe.gov/emeu/aer/pdf/pages/sec13.pdf>, based on heat rates reported on Form EIA-860, “Annual Electric Generator Report” and generation reported on EIA-Form 906, “Power Plant Report” (and predecessor forms). This factor (FFEOKUS) is the U.S. average heat content of fossil fuels consumed at steam-electric power plants as shown in Appendix B. The Btu values for electricity generated from solar energy in California and Texas, as well as the U.S. total, were decreased by 1.4 percent in 1997 and 1998, and by 1.2 percent in 1999.

Wind

Industrial Sector, 1989 through 1999. Wind energy used by nonutility power producers to generate electricity was revised in the EIA Annual Energy Review 2001, http://www.eia.doe.gov/emeu/aer/pdf/pages/sec_h_1.pdf, based on data collected on Form EIA-867, “Annual Nonutility Power Producers Report” and the Form EIA-860B, “Annual Electric Generator Report–Nonutility.” The largest change in U.S. industrial use of wind energy was in 1990, which increased 736 MMkWh, or 24 percent. The smallest changes occurred in 1992 and 1995, when U.S. totals decreased by 1 thousand kilowatt hours (MkWh) and increased by the same amount, respectively. The following States were affected: California, Hawaii, Minnesota, Oregon, and Texas.

Electric Utilities, 1997 through 1999. Although there are no revisions to electricity generated from wind energy at electric utilities, the factor used for converting kilowatt hours to British thermal units was revised in the source publication, the EIA Annual Energy Review 2001, <http://www.eia.doe.gov/emeu/aer/pdf/pages/sec13.pdf>, based on heat rates reported on Form EIA-860, “Annual Electric Generator Report” and generation reported on EIA-Form 906, “Power Plant Report” (and predecessor forms). This factor (FFEOKUS) is the U.S. average heat content of fossil fuels consumed at steam-electric power plants and can be found in Appendix B. The Btu values for wind-generated electricity in California, Iowa and Hawaii, as well as the U.S. total, were decreased by 1.4 percent in 1997 and 1998. In 1999, Btu values for these States and for Vermont, as well as the U.S. totals, were decreased by 1.2 percent.

Wood

Residential Sector, 1998 and 1999. U.S. residential wood consumption for 1998 and 1999 was revised in the EIA Annual Energy Review 2000 by 2.7 percent (507 thousand cords) and 2.4 percent (494 thousand cords), respectively. Revised residential wood consumption in 1999 was 20,694 thousand cords and 19,357 thousand cords in 1998. These changes led to revisions in State residential wood consumption ranging from 1 thousand cords in Wyoming in 1998, to 97 thousand cords in New York in 1999.

Commercial Sector, 1989 through 1999. U.S. total commercial sector wood consumption published in the EIA Annual Energy Review 2001 was revised for 1989 through 1999. Increases ranged from 2.4 percent in 1994, to 5.8 percent in 1989. In 1999, commercial consumption was revised downward by 7.7 percent. Prior to 1999, the smallest revision in volumes was for Wyoming each year, averaging an increase of 3 thousand cords. The largest was for California, at an average of 177 thousand cords, and New York, at an average of 162 thousand cords. In 1999, revisions ranged from a decrease of 11 thousand short tons in Wyoming, to a decrease of 852 thousand short tons in New York.

Industrial Sector, 1989 through 1999. Revisions to nonutility power producer use of wood to generate electricity occurred in the source publication, the EIA Annual Energy Review, based on data collected on Form EIA-867, "Annual Nonutility Power Producers Report" and the Form EIA-860B, "Annual Electric Generator Report -- Nonutility." This led to changes in all State industrial wood and waste consumption from 1989 through 1999. The largest change was a decrease of 674,751 thousand short tons in Minnesota in 1998.

Electric Utilities, 1997 through 1999. Although there are no revisions to electricity generated from wood and waste consumed at electric utilities, the factor used for converting kilowatt hours to British thermal units was revised in the source publication, the EIA Annual Energy Review 2001, <http://www.eia.doe.gov/emeu/aer/pdf/pages/sec13.pdf>, based on heat rates reported on Form EIA-860, "Annual Electric Generator Report" and generation reported on EIA-Form 906, "Power Plant Report" (and predecessor forms). This factor (FFEOKUS) is the U.S. average heat content of fossil fuels consumed at steam-electric power plants and can be found in Appendix B. The Btu values for electricity generated from wood and waste in the States with that type of generation, and the U.S. totals, decreased by 1.4 percent in 1997 and 1998, and by 1.2 percent in 1999.