1998

1 Overnight capital cost plus project contingencies.

2 Because geothermal cost and performance parameters are specific for each of the 51 sites in the database, the value shown is an average for the

capacity built in 2000.

3 Because municipal solid waste (MSW) does not compete with other technologies in the model, these values are used only in calculating the

average costs of electricity.

4 Solar thermal is assumed to operate economically only in Electricity Market Module regions 2, 5, and 10-13, that is, West of the Mississippi

River, because of its requirement for significant direct, normal insolation.

5 Capital costs for solar technologies are net of (reduced by) the 10 percent investment tax credit.

O&M = Operation and maintenance.

Sources: Most values are derived by the Energy Information Administration, Office of Integrated Analysis and Forecasting from analysis of

reports and discussions with various sources from industry, government, and the National Laboratories, with the following specific sources .

**Solar Thermal**: California Energy Commission Memorandum, *Technology Characterization for ER94*, August 6, 1993. **Photovoltaic**:

*Technical Assessment Guide-Electric Power Research Institute* (EPRI-TAG1993). **MSW**: EPRI-TAG 1993.

1999

1Overnight capital cost plus project contingencies, excluding regional multipliers (See Tables 38 and 39).

2Because municipal solid waste (MSW) does not compete with other technologies in the model, these values are used only in

calculating the average costs of electricity.

3Because geothermal cost and performance parameters are specific for each of the 51 sites in the database, the Nth-of-a-kind

capital cost and heatrate are averages for the capacity built in 2000.

4Solar thermal is assumed to operate economically only in Electricity Market Module regions 2, 5, and 10-13, that is, West of the

Mississippi River, because of its requirement for significant direct, normal insolation.

5Capital costs for solar technologies are net of (reduced by) the 10 percent investment tax credit.

O&M = Operation and maintenance.

Sources: Most values are derived by the Energy Information Administration, Office of Integrated Analysis and Forecasting from

analysis of reports and discussions with various sources from industry, government, and the National Laboratories, with the

following specific sources — **Solar Thermal**: California Energy Commission Memorandum, Technology Characterization for

ER94, August 6, 1993. **Photovoltaic**: Technical Assessment Guide-Electric Power Research Institute (EPRI-TAG1993). **MSW**:

EPRI-TAG 1993.

2000

1Overnight capital cost (i.e., excluding interest charges) plus project contingencies, excluding regional multipliers (See Tables 38

and 39). These estimates are costs of new projects as of January 1, 1999.

2Because municipal solid waste (MSW) does not compete with other technologies in the model, these values are used only in

calculating the average costs of electricity.

3Because geothermal cost and performance parameters are specific for each of the 51 sites in the database, the Nth-of-a-kind

capital cost and heatrate are averages for the capacity built in 2000.

4Solar thermal is assumed to operate economically only in Electricity Market Module regions 2, 5, and 10-13, that is, West of the

Mississippi River, because of its requirement for significant direct, normal insolation.

5Capital costs for solar technologies does not include the 10 percent investment tax credit.

O&M = Operation and maintenance.

Note: The first year that a new technology can be built is equal to the first year completed plus the lead time.

Sources: Most values are derived by the Energy Information Administration, Office of Integrated Analysis and Forecasting from

analysis of reports and discussions with various sources from industry, government, and the National Laboratories, with the

following specific sources — Solar Thermal: California Energy Commission Memorandum, Technology Characterization for ER94,

August 6, 1993. Photovoltaic: Technical Assessment Guide-Electric Power Research Institute (EPRI-TAG1993). MSW:

EPRI-TAG 1993.

2001

1Online year represents the first year that a new unit could be completed, given an order date of 2001.

2The technological optimism factor is applied to the first four units of a new, unproven design, it reflects the demonstrated tendency

to underestimate actual costs for a first-of-a-kind unit.

3Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest changes are also

excluded. These represent costs of new projects initiated in 2000.

4O&M = Operation and maintenance.

5Combustion turbine units can be built by the model prior to 2003 if necessary to meet a given region’s reserve margin.

6The costs shown here are slightly different from costs shown in Table 45 because of updated adjustments for inflation. The unit

size shown here is higher than that shown in Table 45 to reflect the minimum size that can be represented meaningfully in the

model. The lead times are also different from those shown in Table 45 because lead times presented here include site acquisition,

site preparation, and permitting for plants that are larger in size.

7Because geothermal cost and performance characteristics are specific for each site, the table entries represent the cost of the least

expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

8Capital costs for geothermal and solar technologies are net of (reduced by) the ten percent investment tax credit.

9Heat rates for solar and wind technologies are fossil-fuel average heat rates.

Source: Values are derived by the Energy Information Administration, Office of Integrated Analysis and Forecasting, from analysis

of reports and discussions with various sources from industry, government, and the Department of Energy National Laboratories.

2002

1Online year represents the first year that a new unit could be completed, given an order date of 2001.

2The technological optimism factor is applied to the first four units of a new, unproven design. It reflects the demonstrated tendency

to underestimate actual costs for a first-of-a-kind unit.

3Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also

excluded. These represent costs of new projects initiated in 2001.

4O&M = Operation and maintenance.

5Combustion turbine units can be built by the model prior to 2003 if necessary to meet a given region’s reserve margin.

6The costs shown here are slightly different from costs shown in Table 41 because of updated adjustments for inflation. The unit

size shown here is higher than that shown in Table 41 to reflect the minimum size that can be represented meaningfully in the

model. The lead times are also different from those shown in Table 41 because lead times presented here include site acquisition,

site preparation, and permitting for plants that are larger in size.

7Because geothermal cost and performance characteristics are specific for each site, the table entries represent the cost of the least

expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

8Capital costs for geothermal and solar technologies are net of (reduced by) the ten percent investment tax credit.

Source: Values are derived by the Energy Information Administration, Office of Integrated Analysis and Forecasting, from analysis

of reports and discussions with various sources from industry, government, and the Department of Energy National Laboratories.

2003

1Online year represents the first year that a new unit could be completed, given an order date of 2002.

2Costs reflect market status and penetration as of 2002.

3The technological optimism factor is applied to the first four units of a new, unproven design. It reflects the demonstrated tendency

to underestimate actual costs for a first-of-a-kind unit.

4Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also

excluded. These represent costs of new projects initiated in 2002.

5O&M = Operation and maintenance.

6Combustion turbine units can be built by the model prior to 2004 if necessary to meet a given region’s reserve margin.

7Because geothermal cost and performance characteristics are specific for each site, the table entries represent the cost of the least

expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

8Capital costs for geothermal and solar technologies are net of (reduced by) the ten percent investment tax credit.

Source: The values shown in this table are developed by the Energy Information Administration, Office of Integrated Analysis and

Forecasting, from analysis of reports and discussions with various sources from industry, government, and the Department of

Energy Fuel Offices and National Laboratories. They are not based on any specific technology model, but rather, are meant to

represent the cost and performance of typical plants under normal operating conditions for each plant type. Key sources reviewed

are listed in the ‘Notes and Sources’ section at the end of the chapter.

2004

1 Online year represents the first year that a new unit could be completed, given an order date of 2003.

2 The technological optimism factor is applied to the first four units of a new, unproven design. It reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

3 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2003.

4 O&M = Operation and maintenance.

5 Combustion turbine units can be built by the model prior to 2005 if necessary to meet a given region’s reserve margin.

6 Because geothermal cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

7 Capital costs for geothermal and solar technologies are shown before the ten percent investment tax credit is applied.

Sources: The values shown in this table are developed by the Energy Information Administration, Office of Integrated Analysis and Forecasting, from analysis of reports and discussions with various sources from industry, government, and the Department of

Energy Fuel Offices and National Laboratories. They are not based on any specific technology model, but rather, are meant to represent the cost and performance of typical plants under normal operating conditions for each plant type. Key sources reviewed are listed in the 'Notes and Sources' section at the end of the chapter.

2005

1 Online year represents the first year that a new unit could be completed, given an order date of 2004.

2 The technological optimism factor is applied to the first four units of a new, unproven design, it reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

3 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2004.

4 O&M = Operations and maintenance.

5 Combustion turbine units can be built by the model prior to 2006 if necessary to meet a given region’s reserve margin.

6 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

7 Capital costs for geothermal and solar technologies are shown before the 10 percent investment tax credit is applied.

Sources: The values shown in this table are developed by the Energy Information Administration, Office of Integrated Analysis and

Forecasting, from analysis of reports and discussions with various sources from industry, government, and the Department of

Energy Fuel Offices and National Laboratories. They are not based on any specific technology model, but rather, are meant to represent the cost and performance of typical plants under normal operating conditions for each plant type. Key sources reviewed are listed in the ‘Notes and Sources’ section at the end of the chapter.

2006

1Online year represents the first year that a new unit could be completed, given an order date of 2005.

2The technological optimism factor is applied to the first four units of a new, unproven design, or regulatory structure. It reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

3 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2005.

4 O&M = Operations and maintenance.

5 Combustion turbine units can be built by the model prior to 2007 if necessary to meet a given region’s reserve margin.

6 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

7 Capital costs are shown before investment tax credits are applied.

Sources: The values shown in this table are developed by the Energy Information Administration, Office of Integrated Analysis and

Forecasting, from analysis of reports and discussions with various sources from industry, government, and the Department of

Energy Fuel Offices and National Laboratories. They are not based on any specific technology model, but rather, are meant to represent the cost and performance of typical plants under normal operating conditions for each plant type. Key sources reviewed are listed in the ‘Notes and Sources’ section at the end of the chapter.

2007

1 Online year represents the first year that a new unit could be completed, given an order date of 2006.

2 The technological optimism factor is applied to the first four units of a new, unproven design, or regulatory structure. It reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

3 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2006.

4 O&M = Operations and maintenance.

5 Combustion turbine units can be built by the model prior to 2008 if necessary to meet a given region’s reserve margin.

6 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

7 Capital costs are shown before investment tax credits are applied.

Sources: The values shown in this table are developed by the Energy Information Administration, Office of Integrated Analysis and

Forecasting, from analysis of reports and discussions with various sources from industry, government, and the Department of

Energy Fuel Offices and National Laboratories. They are not based on any specific technology model, but rather, are meant to represent the cost and performance of typical plants under normal operating conditions for each plant type. Key sources reviewed are listed in the ‘Notes and Sources’ section at the end of the chapter.

2008

1 Online year represents the first year that a new unit could be completed, given an order date of 2007.

2 A contingency allowance is defined by the American Association of Cost Engineers as the "specific provision for unforeseeable elements if costs within a defined project scope; particularly important where previous experience has shown that unforeseeable events which will increase costs are likely to occur."

3 The technological optimism factor is applied to the first four units of a new, unproven design. It reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

4 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2007.

5 O&M = Operations and maintenance.

6 For hydro, wind, and solar technologies, the heatrate shown represents the average heatrate for conventional thermal generation as of 2006. This is used for purposes of calculating primary energy consumption displaced for these resources, and does not imply an estimate of their actual energy conversion efficiency.

7 Capital costs are shown before investment tax credits are applied.

8 Combustion turbine units can be built by the model prior to 2009 if necessary to meet a given region's reserve margin.

9 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

Sources: The values shown in this table are developed by the Energy Information Administration, Office of Integrated Analysis and

Forecasting, from analysis of reports and discussions with various sources from industry, government, and the Department of

Energy Fuel Offices and National Laboratories. They are not based on any specific technology model, but rather, are meant to represent the cost and performance of typical plants under normal operating conditions for each plant type. Key sources reviewed are listed in the ‘Notes and Sources’ section at the end of the chapter.

2009

1 Online year represents the first year that a new unit could be completed, given an order date of 2008. For wind, geothermal and landfill gas, the online year was moved earlier to acknowledge the significant market activity already occuring in anticipation of the expiration of the Production Tax Credit in 2009 for wind and 2010 for the others.

2 A contingency allowance is defined by the American Association of Cost Engineers as the "specific provision for unforeseeable elements if costs within a defined project scope; particularly important where previous experience has shown that unforeseeable events which will increase costs are likely to occur."

3 The technological optimism factor is applied to the first four units of a new, unproven design. It reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

4 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2008.

5 O&M = Operations and maintenance.

6 For hydro, wind, and solar technologies, the heatrate shown represents the average heatrate for conventional thermal generation as of 2007. This is used for purposes of calculating primary energy consumption displaced for these resources, and does not imply an estimate of their actual energy conversion efficiency.

7 Capital costs are shown before investment tax credits are applied.

8 Combustion turbine units can be built by the model prior to 2010 if necessary to meet a given region's reserve margin.

9 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

Sources: The values shown in this table are developed by the Energy Information Administration, Office of Integrated Analysis and

Forecasting, from analysis of reports and discussions with various sources from industry, government, and the Department of

Energy Fuel Offices and National Laboratories. They are not based on any specific technology model, but rather, are meant to represent the cost and performance of typical plants under normal operating conditions for each plant type. Key sources reviewed are listed in the ‘Notes and Sources’ section at the end of the chapter.

2010

1 Online year represents the first year that a new unit could be completed, given an order date of 2009. For wind, geothermal and landfill gas, the online year was moved earlier to acknowledge the significant market activity already occuring in anticipation of the expiration of the Production Tax Credit.

2 A contingency allowance is defined by the American Association of Cost Engineers as the "specific provision for unforeseeable elements if costs within a defined project scope; particularly important where previous experience has shown that unforeseeable events which will increase costs are likely to occur."

3 The technological optimism factor is applied to the first four units of a new, unproven design. It reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

4 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2009.

5 O&M = Operations and maintenance.

6 For hydro, wind, and solar technologies, the heatrate shown represents the average heatrate for conventional thermal generation

as of 2008. This is used for purposes of calculating primary energy consumption displaced for these resources, and does not imply

an estimate of their actual energy conversion efficiency.

7 Capital costs are shown before investment tax credits are applied.

8 Combustion turbine units can be built by the model prior to 2011 if necessary to meet a given region's reserve margin.

9 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

Sources: The values shown in this table are developed by the Energy Information Administration, Office of Integrated Analysis and

Forecasting, from analysis of reports and discussions with various sources from industry, government, and the Department of

Energy Fuel Offices and National Laboratories. They are not based on any specific technology model, but rather, are meant to represent the cost and performance of typical plants under normal operating conditions for each plant type. Key sources reviewed are listed in the ‘Notes and Sources’ section at the end of the chapter.

2011

1 Online year represents the first year that a new unit could be completed, given an order date of 2010. For wind, geothermal and landfill gas, the online year was moved earlier to acknowledge the significant market activity already occuring in anticipation of the expiration of the Production Tax Credit.

2 A contingency allowance is defined by the American Association of Cost Engineers as the “specific provision for unforeseeable elements of costs within a defined project scope; particularly important where previous experience has shown that unforeseeable events which will increase costs are likely to occur”

3 The technological optimism factor is applied to the first four units of a new, unproven design, it reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

4 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2010.

5 O&M = Operations and maintenance.

6 For hydro, wind, and solar technologies, the heatrate shown represents the average heatrate for conventional thermal generation as of 2009. This is used for purposes of calculating primary energy consumption displaced for these resources, and does not imply an estimate of their actual energy conversion efficiency.

7 Capital costs are shown before investment tax credits are applied.

8 Combustion turbine units can be built by the model prior to 2012 if necessary to meet a given region’s reserve margin.

9 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

10 Costs and capacities are expressed in terms of net AC power available to the grid for the installed capacity.

Sources: For the *AEO2011* cycle, EIA commissioned an external consultant to develop current cost estimates for utility-scale electric generating plants. This report can be found at http://www.eia.gov/oiaf/beck\_plantcosts/index.html. Site specific costs for geothermal were provided by the National Energy Renewable Laboratory, “Updated U.S. Geothermal Supply Curve”, February 2010.

2012

1 Online year represents the first year that a new unit could be completed, given an order date of 2011. For wind, geothermal and landfill gas, the online year was moved earlier to acknowledge the significant market activity already occuring in anticipation of the expiration of the Production Tax Credit.

2 A contingency allowance is defined by the American Association of Cost Engineers as the “specific provision for unforeseeable elements of costs within a defined project scope; particularly important where previous experience has shown that unforeseeable events which will increase costs are likely to occur.”

3 The technological optimism factor is applied to the first four units of a new, unproven design; it reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

4 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2011.

5 O&M = Operations and maintenance.

6 For hydro, geothermal, wind, and solar technologies, the heatrate shown represents the average heatrate for conventional thermal generation as of 2010. This is used for purposes of calculating primary energy consumption displaced for these resources, and does not imply an estimate of their actual energy conversion efficiency.

7 Capital costs are shown before investment tax credits are applied.

8 Combustion turbine units can be built by the model prior to 2013 if necessary to meet a given region’s reserve margin.

9 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

10 Costs and capacities are expressed in terms of net AC power available to the grid for the installed capacity.

Sources: For the *AEO2012* cycle, EIA continues to use the previously developed cost estimates for utility-scale electric generating plants, prepared by external consultants for *AEO2011*. This report can be found at www.eia.gov/oiaf/beck\_plantcosts/index.html. Site-specific costs for geothermal were provided by the National Energy Renewable Laboratory, “Updated U.S. Geothermal Supply Curve,” February 2010.

2013

1 Online year represents the first year that a new unit could be completed, given an order date of 2012. For wind, geothermal and landfill gas, the online year was moved earlier to acknowledge the significant market activity already occurring in anticipation of the expiration of the Production Tax Credit.

2 A contingency allowance is defined by the American Association of Cost Engineers as the “specific provision for unforeseeable elements of costs within a defined project scope; particularly important where previous experience has shown that unforeseeable events which will increase costs are likely to occur”

3 The technological optimism factor is applied to the first four units of a new, unproven design, it reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

4 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2012.

5 O&M = Operations and maintenance.

6 For hydro, wind, solar and geothermal technologies, the heatrate shown represents the average heatrate for conventional thermal generation as of 2011. This is used for purposes of calculating primary energy consumption displaced for these resources, and does not imply an estimate of their actual energy conversion efficiency.

7 Capital costs are shown before investment tax credits are applied.

8 Combustion turbine units can be built by the model prior to 2014 if necessary to meet a given region’s reserve margin.

9 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

10 Costs and capacities are expressed in terms of net AC power available to the grid for the installed capacity.

Sources: For the *AEO2013*, EIA updated cost estimates for utility-scale electric generating plants, based on a draft report provided by external consultants. The final report can be found at www.eia.gov/forecasts/capitalcost/. Site specific costs for geothermal were provided by the National Energy Renewable Laboratory, “Updated U.S. Geothermal Supply Curve”, February 2010.

2014

1 Online year represents the first year that a new unit could be completed, given an order date of 2013. For wind, geothermal and landfill gas, the online year was moved earlier to acknowledge both market activity already occurring as well as the incentive for certain types of projects to develop at an accelerated rate in order to qualify for the Production Tax Credit.

2 A contingency allowance is defined by the American Association of Cost Engineers as the “specific provision for unforeseeable elements of costs within a defined project scope; particularly important where previous experience has shown that unforeseeable events which will increase costs are likely to occur.”

3 The technological optimism factor is applied to the first four units of a new, unproven design; it reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

4 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2013.

5 O&M = Operations and maintenance.

6 For hydro, wind, solar and geothermal technologies, the heatrate shown represents the average heatrate for conventional thermal generation as of 2012. This is used for purposes of calculating primary energy consumption displaced for these resources, and does not imply an estimate of their actual energy conversion efficiency.

7 Capital costs are shown before investment tax credits are applied.

8 Combustion turbine units can be built by the model prior to 2015 if necessary to meet a given region’s reserve margin.

9 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

10 Costs and capacities are expressed in terms of net AC power available to the grid for the installed capacity.

Sources: For the AEO2014 cycle, EIA continues to use the previously developed cost estimates for utility-scale electric generating plants, updated by external consultants for AEO2013. This report can be found at http://www.eia.gov/forecasts/capitalcost/. The costs were assumed to be consistent with plants that would be ordered in 2012, and learning from capacity built in 2012 has been applied in the initial costs above. Site-specific costs for geothermal were provided by the National Renewable Energy Laboratory, “Updated U.S. Geothermal Supply Curve,” February 2010.

2015

1 Online year represents the first year that a new unit could be completed, given an order date of 2014.

2 A contingency allowance is defined by the American Association of Cost Engineers as the “specific provision for unforeseeable elements of costs within a defined project scope; particularly important where previous experience has shown that unforeseeable events which will increase costs are likely to occur.”

3 The technological optimism factor is applied to the first four units of a new, unproven design; it reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

4 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2014.

5 O&M = Operations and maintenance.

6 For hydropower, wind, solar and geothermal technologies, the heat rate shown represents the average heat rate for conventional thermal generation as of 2013. This is used for purposes of calculating primary energy consumption displaced for these resources, and does not imply an estimate of their actual energy conversion efficiency.

7 Capital costs are shown before investment tax credits are applied.

8 Combustion turbine units can be built by the model prior to 2016 if necessary to meet a given region’s reserve margin.

9 Because geothermal and hydropower cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

10 Costs and capacities are expressed in terms of net AC power available to the grid for the installed capacity.

Sources: For the AEO2015 cycle, EIA continues to use the previously developed cost estimates for utility-scale electric generating plants, updated by external consultants for AEO2013. This report can be found at http://www.eia.gov/forecasts/capitalcost/. The costs were assumed to be consistent with plants that would be ordered in 2012, and learning from capacity built in 2012 and 2013 has been applied in the initial costs above. Wind capital costs were updated for AEO2015 using recent reports from trade press and reports from Lawrence Berkeley National Laboratory. Site-specific costs for geothermal were provided by the National Renewable Energy Laboratory, "Updated U.S. Geothermal Supply Curve,” February 2010.

2016

1 Represents the first year that a new unit could become operational.

2 A contingency allowance is defined by the American Association of Cost Engineers as the “specific provision for unforeseeable

elements of costs within a defined project scope;

particularly important where pr

evious experience has shown that unforeseeable events which will increase costs are likely to occur.”

3 The technological optimism factor is applied to the first four units of a new, unproven design; it reflects the demonstrated tendency to underestimate actual costs for a first-of-a-kind unit.

4 Overnight capital cost including contingency factors, excluding regional multipliers and learning effects. Interest charges are also excluded. These represent costs of new projects initiated in 2015.

5 O&M = Operations and maintenance.

6 For hydro, wind, solar and geothermal technologies, the heat rate shown represents the average heat rate for conventional thermal generation as of 2014. This is used for purposes of calculating primary energy consumption displaced for these resources, and does not imply an estimate of their actual energy conversion efficiency.

7 Combustion turbine units can be built by the model prior to 2017 if necessary to meet a given region's reserve margin.

8 Capital costs are shown before investment tax credits are applied.

9 Because geothermal and hydro cost and performance characteristics are specific for each site, the table entries represent the cost of the least expensive plant that could be built in the Northwest Power Pool region, where most of the proposed sites are located.

10 Wind's total overnight cost of $1644/kW represents the average input value across all 22 electricity market regions, as weighted by the wind capacity installed during 2014 in each region to account for the substantial regional variation in wind costs (as shown in Table 8.3). The input value used for AEO 2016 was $1837/kW, and represents the cost of building a 100 MW wind plant excluding regional factors. Region-specific factors contributing to the substantial regional variation in cost include differences in typical project size across regions, accessibility of resources, and variation in labor and other construction costs throughout the country.

11 Costs and capacities are expressed in terms of net AC power available to the grid for the installed capacity.

Sources: For the AEO2016 cycle, EIA updated cost estimates for certain electric generating technologies, based on a draft report provided by external consultants. This report will be provided on the EIA website when finalized. Costs were updated for coal with CCS, the combined cycle (without CCS) technologies, the combustion turbine technologies, advanced nuclear, onshore wind and solar PV. Costs for other technologies are consistent with AEO2015 assumptions.