

Table 38. Cost and Performance Characteristics of New Central Station Electricity Generating Technologies

Technology	Online Year ¹	Size (mW)	Leadtimes (Years)	Base Overnight Costs in 2003 (\$2002/kW)	Contingency Factors		Total Overnight Cost in 2003 ³ (2002 \$/kW)	Variable O&M ⁴ (\$2002 mills/kWh)	Fixed O&M ⁴ (\$2002/kW)	Heatrate in 2003 (Btu/kWhr)	Heatrate nth-of-a-kind (Btu/kWhr)
					Project Contingency Factor	Technological Optimism Factor ²					
Scrubbed Coal New	2007	600	4	1,091	1.07	1.00	1,168	3.10	24.81	9,000	8,600
Integrated Coal-Gasification Combined Cycle (IGCC)	2007	550	4	1,292	1.07	1.00	1,383	2.07	34.11	8,000	7,200
IGCC with Carbon Sequestration	2010	380	4	1,894	1.07	1.03	2,088	2.53	40.47	9,600	7,920
Conv Gas/Oil Comb Cycle	2006	250	3	516	1.05	1.00	542	2.07	12.40	7,444	7,000
Adv Gas/Oil Comb Cycle (CC)	2006	400	3	569	1.08	1.00	615	2.07	10.34	6,928	6,350
ADV CC with Carbon Sequestration	2010	400	3	969	1.08	1.04	1,088	2.58	14.93	8,646	7,300
Conv Combustion Turbine ⁵	2005	160	2	394	1.05	1.00	413	4.14	10.34	10,878	10,450
Adv Combustion Turbine	2005	230	2	444	1.05	1.00	466	3.10	8.27	9,289	8,550
Fuel Cells	2006	10	3	1,872	1.05	1.10	2,162	20.67	7.23	7,446	6,750
Advanced Nuclear	2013	1000	6	1,669	1.10	1.05	1,928	0.43	59.17	10,400	10,400
Distributed Generation - Base	2006	2	3	775	1.05	1.00	813	6.20	13.95	9,400	8,900
Distributed Generation - Peak	2005	1	2	930	1.05	1.00	977	6.20	13.95	10,400	9,880
Biomass	2010	80	4	1,588	1.07	1.02	1,731	2.96	46.47	8,911	8,911
MSW - Landfill Gas	2006	30	3	1,381	1.07	1.00	1,477	0.01	99.57	13,648	13,648
Geothermal ^{6,7}	2007	50	4	2,099	1.05	1.00	2,203	0.00	79.28	37,259	36,468
Wind	2006	50	3	949	1.07	1.00	1,015	0.00	26.41	10,280	10,280
Solar Thermal ⁷	2006	100	3	2,478	1.07	1.10	2,916	0.00	49.48	10,280	10,280
Photovoltaic ⁷	2005	5	2	3,810	1.05	1.10	4,401	0.00	10.08	10,280	10,280

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

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 2003.

⁴O&M = Operation and maintenance.

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

⁶Because 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.

⁷Capital 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.