

Table 72. Overnight Capital Cost Characteristics for Renewable Energy Generating Technologies in Three Cases (2006\$/kW)

Technology	Year	Reference	High Cost Renewable ¹	Low Cost Renewable
Geothermal ²	2010	1,126	1,149	1,093
	2020	3,231	3,511	3,031
	2030	3,122	3,647	2,808
Hydroelectric ²	2010	1,769	1,784	1,716
	2020	1,644	1,782	1,631
	2030	1,575	1,782	1,475
Landfill Gas	2010	1,881	1,897	1,881
	2020	1,828	1,897	1,828
	2030	1,776	1,897	1,776
Photovoltaic ³	2010	4,915	5,084	4,825
	2020	4,331	5,084	4,077
	2030	3,681	5,084	3,397
Solar Thermal ³	2010	3,004	3,370	2,941
	2020	2,524	3,370	2,337
	2030	2,149	3,370	1,888
Biomass ⁴	2010	2,758	2,783	2,698
	2020	2,482	2,647	2,301
	2030	2,224	2,487	1,929
Offshore Wind	2010	2,812	2,872	2,808
	2020	2,641	2,872	2,621
	2030	2,473	2,872	2,452
Onshore Wind	2010	1,707	1,721	1,702
	2020	1,693	1,721	1,669
	2030	1,683	1,721	1,656

¹Overnight capital cost (that is, excluding interest charges), plus contingency, learning, and technological optimism factors, excluding regional multipliers. 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. This is particularly important where previous experience has shown that unforeseeable events which will increase costs are likely to occur.

²Geothermal and Hydroelectric costs are specific for each site. The table entries represent the least cost unit available in the specified year in the Northwest Power Pool region. In the 2006 Renewables cases, costs vary as different sites continue to be developed.

³Costs decline slightly in the Low Renewable case for photovoltaic and solar thermal technologies as technological optimism is factored into initial costs (see pg. 72 in the chapter discussing the EMM). However, there is no learning-by-doing assumed once the optimism factor has been removed.

⁴Biomass plants share significant components with similar coal-fired plants, these components continue to decline in cost in the Low Renewables case, although biomass-specific components (especially fuel handling components) do not see cost declines beyond 2005.