LAZARD'S LEVELIZED COST OF ENERGY ANALYSIS 10.0
KEY FINDINGS

Lazard has released the tenth version of its Levelized Cost of Energy Analysis (LCOE 10.0), an in-depth study of Alternative Energy costs compared to conventional generation technologies.

The central findings of the LCOE study are: 1) certain Alternative Energy technologies are cost-competitive with conventional generation under some scenarios, although the rate of cost declines is somewhat muted in this iteration vs. over the last five years; 2) the necessity of investing in diverse generation resources for integrated electric systems for the foreseeable future; and 3) the importance of rational and transparent policies that support a modern and increasingly clean energy economy.

1) Certain Alternative Energy technologies (e.g., wind and utility-scale solar) continue to be cost-competitive with conventional generation technologies in some scenarios, although year-on-year cost declines are less robust than in selected years past. This analysis does not take into account potential social and environmental externalities (e.g., the social costs of distributed generation, environmental consequences of conventional generation, etc.) or reliability- or intermittency-related considerations (e.g., grid investment required to manage intermittency)

- Although the costs of all forms of utility-scale solar photovoltaic and utility-scale onshore wind have declined dramatically over the last five years, the cost profiles of such technologies have decreased relatively modestly since the last iteration of our LCOE study, potentially reflecting the intense focus among key Industry participants on developing, constructing and commissioning projects prior to various subsidy step-downs, rather than investing in technology R&D and manufacturing efficiency

- A number of leading Industry participants are beginning to develop utility-scale wind and solar "plus storage" offerings, thereby increasing capacity factors and serving grid needs not currently met by existing intermittent generation resources. We have included a preliminary analysis of the levelized cost of one such illustrative future offering, which compares favorably to its nearest competition, solar thermal with storage

- The levelized cost of rooftop (both residential and commercial/industrial) solar PV has declined significantly over recent years, driven by more efficient installation techniques and improved supply chains. While rooftop technologies are likely inherently higher cost than utility-scale technologies (as a result of small scale, installation complexity, etc.), the value associated with certain uses of rooftop solar PV by sophisticated commercial/industrial users (e.g., demand charge management, etc.) may exceed, under some circumstances, even this relatively elevated cost profile. Recent investment by incumbent utilities in the suite of technologies that could potentially capture these value streams weighs in favor of such an interpretation

- Very large-scale conventional and renewable generation projects (e.g., IGCC, nuclear, solar thermal, etc.) continue to face a number of challenges, including significant cost

contingencies, high absolute costs, competition from relatively cheap natural gas in some geographies, operating difficulties and policy uncertainty

2) Despite the sustained and growing cost-competiveness of certain Alternative Energy technologies, advanced economies will require diverse generation fleets to meet baseload generation needs for the foreseeable future. The optimal solution for many regions is to use Alternative Energy technologies as a complement to existing conventional generation technologies

- The U.S. (and integrated electric systems globally) will continue to benefit from a balanced generation mix, including a combination of Alternative Energy and conventional generation technologies

- While some Alternative Energy technologies have achieved notional "grid parity" under certain conditions (e.g., best-in-class wind/solar resources), such observation does not take into account potential social and environmental externalities (e.g., social costs of distributed generation, environmental consequences of conventional generation, etc.) or integration- and reliability-related considerations

3) The current dynamic of energy costs has important ramifications for the Industry, policymakers and the public. In the U.S., a coordinated federal and state energy policy, grounded in cost analysis, could enable smarter energy development, leading to sustainable energy independence, a cleaner environment and a stronger economic base—alternatively, policy actions that are not grounded in cost analysis (or that are unduly political) may thwart such objectives

- Alternative Energy costs have decreased dramatically in the past six years, driven in significant part by federal subsidies and related financing tools, and the resulting economies of scale in manufacturing and installation. While a number of these subsidies have been extended, they are expected to step down over the medium-term and thereafter permanently expire. A key question for Industry participants will be whether these technologies can continue their cost declines and achieve wider adoption without the benefit of subsidies in the future

- The public narrative surrounding Alternative Energy has in recent months focused on Alternative Energy as an inefficient "threat" to conventional technologies and related industries, fueled in part by political and campaign rhetoric emphasizing the production and use of coal and natural gas and hostile to governmental involvement in energy markets (notwithstanding the historical and necessary involvement of government in such markets). However, our analysis and Industry perspective indicate that robust, modern and sustainable electricity systems must combine low-cost renewables with baseload conventional technologies