

Levelized Full System Costs of Electricity

Robert Idel

Abstract

Levelized Costs of Electricity (LCOE) are a common metric to evaluate costs of power generation technologies but fail to account for costs associated with intermittency and non-dispatchability of generation, which makes them unable to evaluate renewables like wind and solar properly. Different electricity generating technologies are often compared using the Levelized Costs of Electricity (LCOE), which summarize different ratios of fixed to variable costs into a single cost metric. They have been criticized for ignoring the effects of intermittency and non-dispatchability. This paper introduces the Levelized Full System Costs of Electricity (LFSCOE), a novel cost evaluation metric that compares the costs of serving the entire market using just one source plus storage. Like LCOE, and in contrast to alternatives such as System LCOE, LFSCOE condense the cost for each technology into one number per market. The paper calculates LFSCOE for several technologies using data from two different markets. It then discusses some refinements, including the LFSCOE-95 metric that require each technology to supply only 95% of total demand.

Keywords: Intermittent renewables, Levelized Costs of Electricity (LCOE), System LCOE, Power Generation Economics, Electricity