

THE LEVELIZED COST OF ELECTRICITY FROM EXISTING GENERATION RESOURCES

This study was conducted by Tom Stacy, a former member of the ASME Energy Policy Committee, and George Taylor, PhD, the director of Palmetto Energy Research. It was commissioned by the Institute for Energy Research and the American Coalition for Clean Coal Energy. Full study available at: www.instituteforenergyresearch.org/type/studies

DEFINE: The levelized cost of electricity (LCOE) is “the cost of building and operating a generating plant over an assumed financial life and duty cycle.” The Energy Information Administration (EIA)’s calculations of LCOE and other similar reports do not include the cost of electricity from existing generation resources which this report aims to calculate using data reported by the generators themselves to FERC and EIA.

KEY FINDINGS:

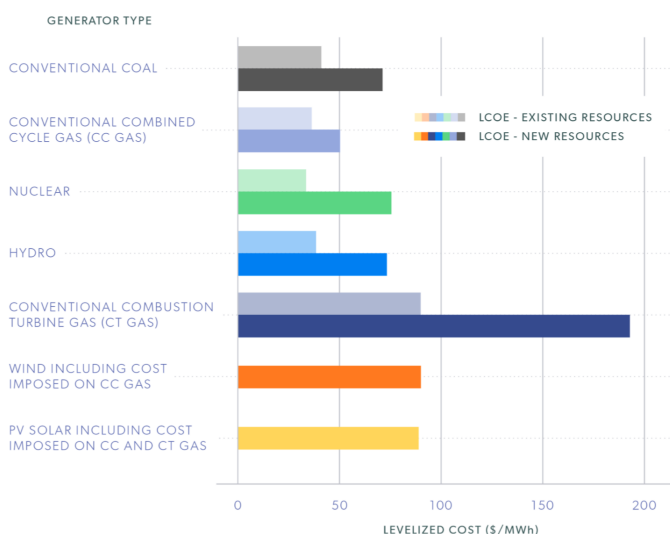
- 1 Continuing to operate existing natural gas, coal, nuclear and hydroelectric resources is 2 to 3 times less costly, on average, than building and operating new wind and solar plants to replace them.

Generating electricity from existing coal-fired, combined-cycle natural gas, hydro, and nuclear power plants is 2 to 3 times less costly than generating electricity from new wind and PV solar plants when the costs of their displacing dispatchable units are taken into account. Wind and solar resources increase the levelized cost of dispatchable resources by reducing their utilization rates. That increase in the levelized cost, we call the “imposed cost,” which we add to the levelized cost of wind and solar generation.

- 2 Existing coal, combined-cycle natural gas, nuclear, and hydro plants can generate electricity at lower cost than a new plant of the same type.

Existing coal-fired power plants can generate electricity at an average levelized cost of \$41 per megawatt-hour, whereas we project the levelized cost of a new coal plant operating for about the same number of hours per year to be \$71 per megawatt-hour. Similarly, we estimate existing combined-cycle gas power plants can generate electricity at an average levelized cost of \$36 per megawatt-hour, whereas the levelized cost of a new combined-cycle gas plant is \$50 per megawatt-hour. Existing nuclear plants have the lowest levelized cost, on average, at \$33 per megawatt-hour, which is less than half that of a new nuclear plant that we estimate at \$75 per megawatt-hour.

Levelized Cost of Electricity from New and Existing Resources



Key Data Point:

The average LCOEs from existing coal (\$41), CC gas (\$36), nuclear (\$33) and hydro (\$38) resources are less than half the cost of new wind resources (\$90) or new PV solar resources (\$88.7) with imposed costs included.