



POSITION STATEMENT

Existing Nuclear Power Plants

*Adopted by the IEEE-USA
Board of Directors (11 June 2020)*

IEEE-USA supports the sustained operation of existing nuclear power plants because it is vital to the continued security and economic prosperity of the United States. These plants have operated, and can continue to operate, reliably and safely. These plants are essential to the long-term supply of economical electricity to consumers and businesses.

IEEE-USA's position is that these units, most of which have been relicensed for up to 20 years of additional operation, are needed for their value to the electricity system and for their substantially emission-free character. They employ highly skilled workforces, and they have also provided a resource for American innovation and technology marketing abroad.

IEEE-USA also recognizes that, as plants age, they require enhanced safety inspections and other precautions to make sure that the American nuclear energy industry's stellar safety record remains intact. Such control is provided under the oversight of the Nuclear Regulatory Commission (NRC).

IEEE-USA RECOMMENDS:

- **Wholesale Energy Market:** Prioritized restudy, by appropriate governmental and nongovernmental authorities, of the operation of the wholesale energy markets, with a view to leveling the playing field for low-carbon generation technologies. In particular, zero or negative bids, forcing the selection of sources which may not otherwise be optimum choices, should be disallowed.
- **Low Emission Source:** Action by appropriate authorities to redefine nuclear energy as a low-emission source, which would then qualify under renewable energy standards. The operation of these plants provides comparable environmental benefits to traditional renewables, and therefore should be part of an environmentally sound energy portfolio.

BACKGROUND

Nuclear power plants supply nearly 20 percent of the electricity consumed in the United States, and generate more than 55 percent of all emission-free electricity in the United States.¹ They have operated with average capacity factors near 90% since the 1990's, with excellent safety records. Furthermore, NRC has intensively reviewed existing US nuclear plants in light of the Fukushima Daichi accident, and most plants have completed upgrades to prevent and/or limit consequences from a wide range of natural disasters.

However, US electricity markets do not always compensate operators for the reliability and resilience of supply. This has resulted in the premature shutdown – that is, retirement for reasons unrelated to their operability — of at least six reactors, totaling 3843 megawatts, since 2013, with a number of additional plants already scheduled for similar premature shutdown.⁴ Retirements are already in process or have been proposed for up to a dozen additional reactors. Continuing loss of such plants has the potential to cause disruption within the power system, because these plants make an important contribution to the nation's electric power supply and to the stability of the electric grid. Nuclear plants run steadily at full output—in the language of grid operators, they are "base loaded"—and therefore they help to steady the grid as other sources and demand fluctuate.

While market forces do play a role in these closings, political decisions also play a part, and these political decisions are not always based on economic, scientific or environmental criteria. State renewable energy portfolio standards, for example, typically require states to prioritize wind, solar and other energy sources before nuclear, placing nuclear at an unfair disadvantage. Yet the environmental benefits of nuclear energy, particularly with respect to carbon emissions, are comparable to those of both solar and wind.

The nation's existing operational nuclear power plants avoided the emission of nearly 550 million metric tons of carbon dioxide in 2016². This is equivalent to nearly half of the emissions from US motor gasoline in 2016³.

¹ US Energy Information Administration, Net Generation 2018, by Source

² Nuclear Energy Institute, NEI Knowledge Center

³ Energy Information Administration, GHG Emissions, 1,102 million metric tons of CO₂, Motor Gasoline

⁴ Nuclear News (American Nuclear Society), March 2020, p.63. During this period, three other reactors have also been retired, at least in part because of mechanical problems.

⁵ IPCC Working Group III, Mitigation of Climate Change, Annex III: Technology-specific cost and performance parameters. Table A.III.2, Emissions of selected electricity supply technologies (gCO₂eq/kWh). Intergovernmental Panel on Climate Change. 2014

Experts agree that life-cycle greenhouse gas emissions from nuclear units, per kilowatt-hour, are comparable to those of solar photovoltaic and of wind installations⁵. In most locations, loss of nuclear generation requires replacement energy from fossil fuels; in some places where such units have been recently retired, evidence already demonstrates increases in regional greenhouse gas emissions. Such areas are also seeing increased emissions of other fuel-derived pollutants, e.g. nitrogen oxides, sulfur oxides, and particulates, as a result of the replacement generation.

This statement was developed by IEEE-USA's Energy Policy Committee, and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field. IEEE-USA advances the public good, and promotes the careers and public policy interests of the nearly 180,000 engineering, computing and allied professionals who are U.S. members of IEEE. The positions taken by IEEE-USA do not necessarily reflect the views of IEEE, or its other organizational units.