

# U.S. Commercial Nuclear Power Plants: A Vital National Asset

Photo courtesy of Exelon Corporation

The American Nuclear Society (ANS) believes that the sustained operation of the current nuclear fleet is vital to the continued security and economic prosperity of the United States and the world. U.S. nuclear power plants provide reliable clean energy, help diversify our electricity supply, and support continued U.S. influence over global safety and nonproliferation standards. However, many U.S. electricity markets fail to recognize and appropriately compensate operators for the valuable attributes of nuclear energy. This distortion has resulted in the premature shutdown of several U.S. nuclear power plants and has made the construction of new nuclear power plants financially challenging, potentially compromising the future reliability of the U.S. electricity system.

Nuclear energy provides about 20 percent of the electricity generated in the United States and avoids the emission of nearly 600 million metric tons of carbon dioxide annually, an amount roughly equivalent to the emissions of all passenger cars operating in the United States.<sup>1</sup> Nuclear power plants also avoid emissions of pollutants from fossil fuel generation such as sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and particulates, that can contribute to asthma and symptoms of other respiratory ailments.<sup>2</sup>

In addition, the U.S. nuclear industry directly provides significant numbers of high-paying jobs<sup>3</sup> and supports many more jobs indirectly. The closure of a nuclear power station results in the elimination of 400–700 jobs with salaries that are over 30 percent higher than those for similar jobs in other fields and the loss of at least \$400 million in economic output to the surrounding community.<sup>4</sup>

Nuclear energy also contributes to fuel diversity for the U.S. electricity supply. High reliability and around-the-clock availability make nuclear power plants the ideal provider of the clean baseload electric power that is essential to support a modern industrial society. Nuclear plants have several distinct advantages over other

forms of electricity generation, including on-site fuel supply and the ability to withstand extreme weather events such as hurricanes and extended cold weather (e.g., the 2014 polar vortex).<sup>5</sup>

The loss of additional operating nuclear power plants in the United States will reduce key capabilities of our domestic nuclear industry, particularly our capacity to export U.S. nuclear technology and, along with it, our world-leading safety and nonproliferation standards. The U.S. Nuclear Regulatory Commission is considered the gold standard of industrial safety regulators, and the U.S. nuclear fleet is the world leader in plant safety, reliability, and performance. American engineers and experts are involved in a wide range of projects worldwide and are valued by developing nations that are creating nuclear energy programs. These experts bring the U.S. safety culture and its focus on nonproliferation with them wherever they work, and in doing so they make the world a safer place. Maintaining this level of involvement and leadership requires a strong domestic nuclear fleet; we cannot develop and maintain the necessary professional talent without it. As a result, the health of our domestic nuclear power industry is a vital national security issue, and U.S. nuclear power plants are key national assets.

The American Nuclear Society recommends the following:

1. **Federal and state policies should be enacted to level the playing field between nuclear power and other clean energy generation technologies.** While solar and wind power provide carbon-free electricity, these generators operate only intermittently. At times of high wind or solar energy generation, these renewable sources can drive electricity market prices to zero, or below zero in some regions, reducing revenue for all other energy producers, including nuclear power plants. State and federal economic incentives provided to solar and wind power, but not to nuclear power, enable solar and wind projects to remain profitable at such times; these incentives should be extended to

include nuclear power. In addition, deregulated electricity markets focus on short-term electricity prices and do not fully compensate generators that support year-round reliability and grid stability. These electricity markets do not address long-term reliability issues well.

2. **State laws and electricity market rules should be adjusted to support nuclear power by the enactment of policies at the federal and state levels, as needed.** Electricity markets have implemented capacity side markets to help manage system reliability, but even the combination of electricity spot markets and capacity markets does not fully support the attributes of nuclear power. The electricity markets should, to the extent possible, reform their rules to ensure that spot market prices reflect the full cost of operation. Electricity market spot prices should be reformed to reflect the value of avoided emissions. Capacity markets should be reformed to provide longer-term revenue that will be consistent with power plant decision-making. Legislation should be enacted to allow for regional and state capacity planning using long-term bilateral contracts in states and regions with Federal Energy Regulatory Commission–regulated electricity markets.

3. **Support for nuclear power should include a greater role for the federal government.** The major nuclear industrial countries in the world (e.g., China, Russia, France, and South Korea) have nuclear power and nuclear supplier industries that are owned by the government and are used to achieve commercial success in the export markets. Even if nuclear power's electricity industry attributes are compensated, the U.S. nuclear power and nuclear supplier industries may not be able to compete with these government-owned nuclear industrial competitors. The U.S. federal government should have a role in helping the U.S. nuclear power and nuclear supplier industries remain competitive, as well as in communicating the important benefits that nuclear provides to our economy and to the environment.

Nuclear power plants have a vital role to play in the reliability of our electricity grid, our national energy independence, the health of our climate, and the achievement of global nuclear nonproliferation. The current U.S. nuclear fleet cannot support these objectives if its economic health is undermined by markets that do not recognize or compensate nuclear for the benefits it offers. The American Nuclear Society supports actions to bolster the current nuclear fleet and improve its economic future.

## References

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708-352-6611

askanything@ans.org

ans.org