

Why GAO Did This Study

NRC licenses and regulates the use of nuclear energy to provide reasonable assurance of adequate protection of public health and safety, to promote the common defense and security, and to protect the environment. Like all energy infrastructure, nuclear power plants can be affected by disruptions from natural hazards, some of which are likely to be exacerbated by climate change. Most commercial nuclear plants in the United States were built in the 1960s and 1970s, and weather patterns and climate-related risks to these plants have changed since their construction.

GAO was asked to review the climate resilience of energy infrastructure. This report examines (1) how climate change is expected to affect nuclear power plants and (2) NRC actions to address risks to nuclear power plants from climate change. GAO analyzed available federal data and reviewed regulations, agency documents, and relevant literature. GAO interviewed officials from federal agencies, including NRC, the Department of Energy, and the National Oceanic and Atmospheric Administration, and knowledgeable stakeholders from industry, academia, and nongovernmental organizations. GAO also conducted site visits to two plants.

What GAO Recommends

GAO is making three recommendations, including that NRC assess whether its existing processes adequately address climate risks and develop and implement a plan to address any gaps identified. NRC said the recommendations are consistent with actions that are either underway or under development.

View [GAO-24-106326](#). For more information, contact Frank Rusco at (202) 512-3841 or ruscof@gao.gov.

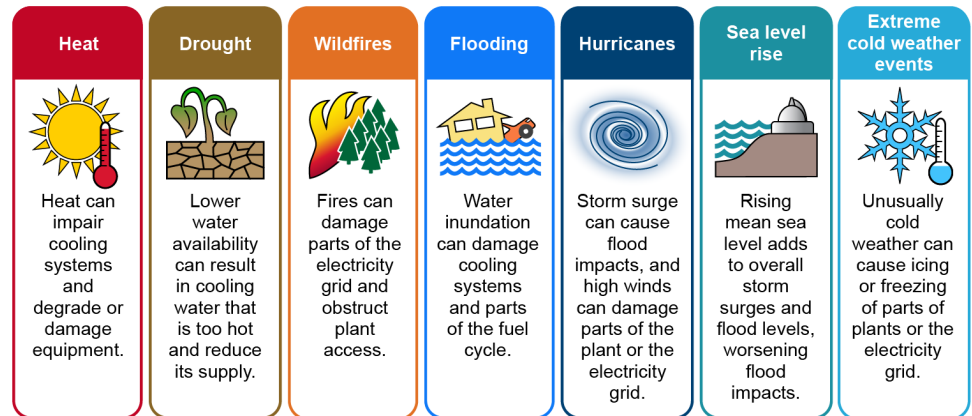
NUCLEAR POWER PLANTS

NRC Should Take Actions to Fully Consider the Potential Effects of Climate Change

What GAO Found

Climate change is expected to exacerbate natural hazards—including heat, drought, wildfires, flooding, hurricanes, and sea level rise. In addition, climate change may affect extreme cold weather events. Risks to nuclear power plants from these hazards include loss of offsite power, damage to systems and equipment, and diminished cooling capacity, potentially resulting in reduced operations or plant shutdowns.

Examples of Natural Hazards that May Pose Risks to Nuclear Power Plants



Sources: Nuclear Regulatory Commission documents; summary of literature; GAO (icons). | GAO-24-106326

The Nuclear Regulatory Commission (NRC) addresses risks to the safety of nuclear power plants, including risks from natural hazards, in its licensing and oversight processes. Following the tsunami that led to the 2011 accident at Japan's Fukushima Dai-ichi nuclear power plant, NRC took additional actions to address risks from natural hazards. These include requiring safety margins in reactor designs, measures to prevent radioactive releases should a natural hazard event exceed what a plant was designed to withstand, and maintenance of backup equipment related to safety functions.

However, NRC's actions to address risks from natural hazards do not fully consider potential climate change effects. For example, NRC primarily uses historical data in its licensing and oversight processes rather than climate projections data. NRC officials GAO interviewed said they believe their current processes provide an adequate margin of safety to address climate risks. However, NRC has not conducted an assessment to demonstrate that this is the case. Assessing its processes to determine whether they adequately address the potential for increased risks from climate change would help ensure NRC fully considers risks to existing and proposed plants. Specifically, identifying any gaps in its processes and developing a plan to address them, including by using climate projections data, would help ensure that NRC adopts a more comprehensive approach for assessing risks and is better able to fulfill its mission to protect public health and safety.