

December 10, 2015

The Honorable Edward J. Markey  
United States Senate  
Washington, DC 20510

Dear Senator Markey:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your letter of October 19, 2015, requesting information on the effects of extreme weather, higher water temperatures, and climate change on nuclear power plants over the past decade. Information responsive to your request is enclosed.

In compiling a list of power reactor shutdowns and power reductions, NRC staff searched through events that were required to be reported to the NRC and also met the conditions described in your request. NRC's reporting criteria generally require power reactor licensees to report reactor trips and the completion of technical specifications-required shutdowns. These criteria require licensees to report the state of the plant at the time the event becomes reportable, but do not require a discussion of the duration of a shutdown or power reduction. Therefore, durations provided in Enclosure 1 represent conservative NRC staff estimates for each listed shutdown or power reduction based on other information sources available to the NRC. It is likely that the Federal Energy Regulatory Commission, as the Federal agency responsible for monitoring reliability of the grid, also would have data regarding power plant changes induced by weather effects.

Licensees' capability to respond safely to extreme weather events is examined through the NRC's baseline inspection program. Structures, systems, and components important to safety at nuclear power plants are required to be designed to withstand the effects of natural phenomena without loss of capability to perform their intended safety functions. The design bases for these structures, systems, and components reflect consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area. The design bases also reflect margin to account for the limited accuracy, quantity, and period of time in which the historical data have been accumulated. Additional protection is provided through analysis, procedures, and maintenance practices. Together, these protections provide reasonable assurance of the continued safe operation of nuclear power plants under extreme environmental conditions.

In addition to a list of shutdowns and power reductions, you also requested a list of requests for permission to increase the water intake temperature, as well as the NRC's justifications for approving or denying those requests. The NRC requires nuclear power plants to have an ultimate heat sink (UHS), a source of cooling water that is available under both normal and accident conditions, to remove heat from structures, systems, and components important to safety. It is the temperature of this UHS that limits the ability of the facility to remove heat from the plant.

Enclosure 2 lists approved license amendments that changed the temperature limits of the UHS, as well as license amendment requests that were denied. License amendment requests that did not change the temperature limits, but are otherwise related to your request, as well as notices of enforcement discretion related to UHS temperatures, are also listed. Due to the volume of the correspondence associated with the listed actions, the accession numbers in the NRC's Agencywide Documents Access and Management System for these materials are provided.

If you need any additional information, please contact me or Eugene Dacus, Director of the Office of Congressional Affairs, at (301) 415-1776.

Sincerely,

*/RA/*

Stephen G. Burns

Enclosures:  
As stated