

Entergy's Pilgrim Nuclear: Climate Change Impacts on Operations & Public Safety

Background: Entergy's 43 year-old Pilgrim Nuclear Power Station has been on the U.S. Nuclear Regulatory Commission's list of worst performing reactors since 2013 and has a long history of accidents and mismanagement.¹ Pilgrim's infrastructure is vulnerable to climate change impacts since it is located directly on Cape Cod Bay. This poor safety record combined with the impacts of climate change present a risk to public health, safety and the environment. About 5 million people live within 50 miles of Pilgrim, including Boston and Providence. Fifty miles was the NRC and White House recommended evacuation zone during the Fukushima, Japan nuclear disaster.

Climate change impacts that threaten Pilgrim include higher intensity storms, warming ocean temperatures, sea level rise, storm surge, and wave attack.² Some of these conditions contributed to mechanical failures at Pilgrim during "Juno" 2015.³

Potential economic damage and human illness could result from climate change impacts to infrastructure at Pilgrim. This could cause a spent fuel fire that could result in up to \$488 billion in economic damages and 24,000 latent cancers.⁴

Entergy's new nuclear waste storage facility, or Independent Spent Fuel Storage Installation (ISFSI) for high level nuclear waste, is about 175 ft. from the shore and is exposed to flooding and the corrosive action of salt water.⁵ This facility must store nuclear waste indefinitely – for hundreds, if not thousands of years. Energy also stores low level radioactive waste about 30 ft. from the shore.⁶

There is inadequate flooding data and emergency mitigation for Pilgrim. Following Fukushima, the NRC ordered Entergy to provide an updated flood assessment for their facilities⁷ which is due to the NRC by Mar. 12, 2015. The NRC also ordered Entergy to come up with new plans, referred to as "FLEX" for "beyond design basis" emergencies such as loss of off site power due to extreme weather. There is no updated, accurate flood analysis for Pilgrim. Entergy's Mar. 12th report should address this. Entergy's proposed "FLEX" plan requires deployment of workers and equipment on the beach at the mean high tide line, during coastal storms and ignores climate change impacts.⁸

Rising water temperatures in Cape Cod Bay are making it too warm for Pilgrim's cooling water system.⁹ Pilgrim was forced to reduce power twice in 2013 due to water that was too warm and to comply with its license.¹⁰

For more information, visit www.capecodbaywatch.org/climate-change-and-nuclear-power/

1 Pilgrim Watch, Spring 2014. Pilgrim Risks: Accidents and Daily Operations (Pilgrim Watch Report).

2 U.S. DOE, 2013. U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather; National Academy of Sciences, Jul 2014. Reducing Coastal Risk on the East and Gulf Coasts.

3 See NRC Event Reports: <<http://www.nrc.gov/info-finder/reactor/pilg.html>>; Pilgrim Event Reports: # 50769, 1/27/15 at 0402 hours (Automatic Reactor SCRAM on Turbine Trip Due to Loss of Offsite Power); #50771, 1/27/15 (Loss of High Pressure Coolant Injection); # 50790, 2/5/15 report for event on 1/27/15 (Loss of Sea Water Intake Bay Level Instrumentation Due to Loss of Instrument Air).

4 Beyea J, 2006. Report to the MA Attorney General on the potential consequences of a spent-fuel-pool fire at the Pilgrim or Vermont Yankee nuclear plant.

5 Compare: Entergy 2012 plans showing 24.5' with public statements saying 23 to 25 feet. Barnstable Patriot, 2/16/15. NRC conducting 'special inspection' at Pilgrim; CapeCod.com, 1/3/15. Pilgrim Nuclear to Move Spent Fuel to Dry Cask Storage.

6 <www.capecodbaywatch.org/2014/05/lowdown-on-pilgrims-so-called-low-level-radioactive-waste/>

7 NRC, 5/12/12. ML12053A340.

8 JRWA, 7/31/14. <www.capecodbaywatch.org/wp-content/uploads/2014/FINAL%207_31_14%20dubois%20tidelands%20comments%20with%20exhibits.pdf>

9 Sea surface temperature 2.3°F (1.3°C) between 1970 and 2002. EEA and the Adaptation Advisory Committee, 2011. MA climate change adaptation report.

10 In July 2013 the temperature of Cape Cod Bay water became >75°F; NRC. July 16-17, 2013 Event Reports.