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**Docket:** NRC-2020-0277

Notice of Intent to Conduct Scoping Process and Prepare Environmental Impact Statement NextEra Energy Point Beach, LLC; Point Beach Nuclear Plant, Unit Nos. 1 and 2

**Comment On:** NRC-2020-0277-0194

NextEra Energy Point Beach, LLC; Point Beach Nuclear Plant, Units 1 and 2

**Document:** NRC-2020-0277-DRAFT-0241

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## General Comment

See attached file(s)

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## Attachments

Behrmann Final Comments to PBNP EIS 1-3-2022

Comments for NextEra Energy Point Beach, LLC; Point Beach Nuclear Plant, Units 1 and 2  
[Docket \(NRC-2020-0277\)](#)

1) The Generic EIS document **NUREG-1437, Volume 1 Revision 1** submitted for this EIS for License Renewal for Point Beach Nuclear Plants (PBNP) Units 1 and 2, published June 2013 is outdated for many issues, not in the least is its use of the IPCC (Intergovernmental Panel on Climate Change) document from 2007. This every 10 year Generic EIS must be produced by the NRC for Nuclear Power Plants more frequently in light of the climate change's acceleration of extreme weather patterns in the past two decades.

The IPCC report was last fully updated in 2019 and the most recently the IPCC's AR Six <https://www.ipcc.ch/assessment-report/ar6/> whose Physical Sciences Basis was published in August 2021 with the remaining sections published by the end of 2022. I realize that currently the Generic EIS for License Renewal for Nuclear Plants is only published every 10 years with the data researched and collated over the previous decade, but Climate Change is accelerating rapidly, most significantly in the last 2 decades. This must compel the NRC to accelerate data collection to, at minimum, a 5 year accrual basis to examine Climate Change's impact on the environment of nuclear plants, not only on terrestrial and aquatic ecosystems, but to accurately assess the known impact of more frequent and more deadly storms systems and their impact on external accident risks (SAMA). I reference here the August 20, 2020 Derecho near Cedar Rapids, Iowa that took out power from the Duane Arnold Nuclear Plant for nearly 24 hours. Operators there worked against the odds with a deteriorated plant (originally scheduled for closure in October 2020) to avert a fuel meltdown (see <https://www.weau.com/2021/12/20/national-weather-service-confirms-december-15ths-severe-weather-event-derecho/> ). Not only did this same derecho affect central Wisconsin with days of power outages rurally and roads that were blocked by downed trees and power links that would inhibit quick evacuation in the event of a severe unmitigated accident, Wisconsin suffered a more recent "serial derecho" on 12/15/2021, the first on record for so late in the year (see <https://www.weau.com/2021/12/20/national-weather-service-confirms-december-15ths-severe-weather-event-derecho/> ). In addition to derechos, Lake Michigan has suffered more extreme fluctuation of lake levels--both a record low water level in 2013 and high water level in 2020 in the past decade--with increased storm surges affecting beaches on Lake Michigan, including Point Beach State Forest, approximately 7 miles south of PBNP <https://inthesetimes.com/article/wisconsin-state-parks-lake-michigan-erosion-dnr-climate-change> . This lake level change could not only endanger operations at Point Beach Nuclear Plants but also potentially affect the onsite storage area for nuclear waste.

In conclusion, Climate Change will have a significant impact on terrestrial and aquatic ecosystems but also likely increase external accident risks for nuclear plants. Assessment of this accelerated risk should have been included not only in the Generic EIS but also the Supplement 23 Second Renewal Regarding Subsequent License Renewal for Point Beach Nuclear Plant Units 1 and 2, **NUREG-1437 Supplement 23 Second Renewal** and in an updated version of the State-of-the-Art Reactor Consequence Analysis (SOARCA) **NUREG-1935**, last published in November 2012.

2) Thermal Pollution from the antiquated Once-Through-Cooling-System of Point Beach Units 1 and 2 for the past 51 and 48 years, respectively, of operation, has not been scientifically evaluated for cumulative effects on Lake Michigan's aquatic ecosystem, at least since PBNP's 2012 WPDES permit. This includes no rigorous evaluation of PBNP's 14% power upgrade approved by the NRC in 2011 to 8273

MBtu/hour with mean discharge temperatures increased to 13.5 degrees C [24.3 degrees F] warmer than ambient Lake Michigan temperature).

From the document, Point Beach Nuclear Plant Units 1 and 2 Dockets 50-266 and 50-301 NRC 2020-0032 Enclosure 3 Appendix E Applicant's Environmental Report Subsequent Operating License Renewal Point Beach Nuclear Plant Units 1 and 2 Attachment 2, pages 51-52/705, NextEra states that the jet action of PBNP water discharge (at a velocity of < 4 feet/second) is *"expected that this jet action will promote mixing with colder water in the immediate vicinity of the discharge flume and a rapid reduction in pronounced differential temperatures. In addition, observations at power station discharges in Lake Michigan at Gary, Indiana, and Waukegan, Illinois, have shown that the wave action and shore currents are very effective in breaking up any tendency to pronounced stratification and isolation of the warm water. It is expected that this action, together with the jet momentum entrainment of colder water, will cause all temperature effects to be indiscernible within less than one mile from the point of discharge."* But this data (PBN 2019a, Section 2.5.3) was not available to the public to read and assess how the science of the 'observations' in Gary and Waukegan (both coal fired power plants?) were done. There is clear data from nuclear plants located on the Atlantic and Pacific Oceans (see <https://www.nirs.org/wp-content/uploads/reactorwatch/licensedtokill/LiscencedtoKill.pdf>) and on the Hudson River that once-through cooling systems cause significant damage (not SMALL as this EIS implies) to aquatic environments, both in ocean and fresh water species (see also <https://www.nrdc.org/sites/default/files/power-plant-cooling-IB.pdf> and <http://large.stanford.edu/courses/2019/ph241/clark1/> Legal proceedings have mandated through NPES under the Clean Water Act that those plants build cooling towers or close.

Note that data from Point Beach on impingement (by owners WEPCO in 1975-6 and again by EA Engineering in 2005-6) have shown significant effects on fish, particularly alewife and rainbow smelt species, the greatest risk is 'heat shock' (measured crudely by floating dead fish) and thermal plumes that can both create barriers to migrating fish species and reduce aquatic habitat/alter habitat characteristics that impact the local aquatic community. But this current EIS lacks data on impingement for the past 15 years while populations of fish species have markedly decreased. There have also been 3 entrainment studies (1975, 2006 and most recently in 2016) that demonstrated primarily the loss of sport fish, not impact on the full aquatic ecosystem of Lake Michigan due to Point Beach Nuclear Plant's thermal load. The NRC staff concludes *"concludes that the impacts of impingement and entrainment of aquatic organisms resulting from the proposed Point Beach subsequent license renewal would be SMALL."* P160/369. Again NRC has shifted the responsibility to the Wisconsin DNR's WPDES 2020 permit (still pending) to determine if any mitigation to reduce damage to Lake Michigan's aquatic ecosystem by use of Best Technology Available (BTA) (ie the mandate for NextEra to construct Cooling Towers for PBNP) is warranted.

3) Environmental Justice issues on energy burden is missing from the EIS. Energy costs are part of the picture of environmental justice and the 10-15% of low income households in the 50 mile radius of Point Beach Nuclear Plant who are We Energies ratepayers are paying way too much in utility costs due to a now unjust PPA negotiated between NextEra and We Energies when PBNP was sold in 2007. This data is missing from the EIS by NextEra's License Renewal Application and the NRC's EIS and this PPA should be amended NOW to reduce the burden to these affected Wisconsin families.

See the information presented by Mark Cooper, PhD on current costs per KWH to ratepayers whose utility uses power from Point Beach Nuclear Plant Unit 1 and 2. (see

<https://static1.squarespace.com/static/55b8f343e4b01341cb1a19e6/t/605b2db3954e6e40818c2f70/1616588214730/Cooper+DONE.pdf>

His expert testimony states that NextEra's Purchased Power Agreement with We Energies from 2007 is costing families approximately \$300/year more in utility costs (now about 1.8 times the market price of electricity in 2021) through the end of the current PBNP licenses in 2030-2033. This total is about \$5 billion dollars that should be spent on conversion to renewable energies and investment in residential and commercial energy conservation. According to the federal Oak Ridge National Laboratory's ORNL/TM-2014/133 Weatherization Assistance Program Technical Memorandum Background Data and Statistics On Low-Income Energy Use and Burdens report "*households earning less than twice the federal poverty level — roughly less than \$50,000 for a family of four — spend an average of 16 percent of their income on energy costs. Households earning above \$100,000 spend just 3.5 percent.*" (See <https://www.politico.com/news/agenda/2021/02/01/you-want-environmental-justice-look-to-energy-efficiency-463839> ).

4) The definition of "Foreseeable Future" in the EIS is erroneous to include ONLY the impact of plant operation through the period of licensing but must include how Point Beach Nuclear Plant's nuclear waste storage, likely onsite past the time of operation and during decommissioning, will impact the environment in and near Two Creeks, Wisconsin, Lake Michigan and the surrounding 50 mile radius if an accident to the storage casks should occur.

The definition from the EIS on 'foreseeable future' from p. 247/369 is "*Reasonably foreseeable future actions are those that would occur through the end of power plant operation, including the period of extended operation. Therefore, the cumulative impacts analysis considers potential effects through the end of the current license term, as well as through the end of the 20-year subsequent license renewal term.*"

5) There is an inadequate assessment of risk to human health if there were to be a severe nuclear accident, particularly in the instance of an unmitigated accident leading to a reactor core meltdown (such as occurred at Fukushima Daiichi after the March 11, 2011 tsunami and loss of generator power to cool spent fuel in 3 of 6 reactors with subsequent Hydrogen gas explosions).

The EIS for PointBeachNextEra's application for License Renewal references the most recent NRC State-of-the-Art Reactor Consequences Analysis (see [http://static1.1.sqspcdn.com/static/f/356082/16496650/1328759178377/ep\\_soarca\\_ML12026A470.pdf?token=DgUjnxym%2B1M1OY4UnOYY89MRxD4%3D](http://static1.1.sqspcdn.com/static/f/356082/16496650/1328759178377/ep_soarca_ML12026A470.pdf?token=DgUjnxym%2B1M1OY4UnOYY89MRxD4%3D) )

This SOARCA uses modeling for accidents that is more than a decade and half old and is based on MELCOR (developed in 1991) and updated with MACCS2 in 2006. SOARCA from 2012 assesses mitigated and unmitigated accidents at another Westinghouse Pressurized Water Reactor, Surrey, in Virginia, similar to Point Beach Units 1 and 2. Assessments of accident risks have indeed changed since the NRC's first analysis of the risk of accidents to human health commissioned by NRC to Sandia Laboratory in 1982, Calculations of Reactor Accident Consequences, yet both analyses do not include cancer incidents, but only early fatalities and death from cancer, NOT cancer morbidity or the risk of developing cancer from accidental excessive radiation exposure. As anyone with a cancer diagnosis understands, even if one is able to achieve cure or remission with treatment, any cancer diagnosis affects the cancer victim and their family and friends significantly and throughout their lifespan—both physically and mentally. In addition, we now understand that significant excess deaths post Fukushima were 1) from evacuees who

were unable to access diagnosis and adequate treatment for chronic illness, something that is not discussed in SOARCA and 2) a large portion of those affected by the Fukushima meltdowns suffered an increase in significant mental illness, both from stress, anxiety and social displacement, something that needs also to be included in any human health analysis of Reactor Accident Consequences.

( See <https://www.thelancet.com/action/showPdf?pii=S0140-6736%2813%2960091-4>

<https://www.jstor.org/stable/26383975>

<https://reader.elsevier.com/reader/sd/pii/S0936655516000054?token=D528C80DF41881E3250B4BACB0035CC54B2EA0C96F47D3B8AF5D134E95995A82A2E9CF1353CC925372526B388D8F82B7&originRegion=us-east-1&originCreation=20220104023012> ).

Also the SOARCA authors did not include an MD/DO or DrPH (Doctorate in Public Health) which should be included in the NRC's team to assess human health risks from severe accidents (in addition to health radiation PhD)s.

The SOARCA's document for the public, MODELING POTENTIAL REACTOR ACCIDENT CONSEQUENCES estimates that there would be time (20 hours prior to radiation release in unmitigated accidents) to evacuate everyone in the 10 mile radius of nuclear plant and that only 0.5% of the population would not evacuate. I believe in light of the information we have on Covid-19 behavior assessment of population acceptance of public health advice and the fact that some of the population around Point Beach are farmers with domestic dairy and other animals they must care for, that this assessment of successful evacuation to prevent excessive radiation exposure needs to be reconsidered. Also there might be, with less severe accidents and less release of radioactivity, advice to 'shelter in place' which residents, particularly the elderly, disabled and infants/small children residing in the 10 mile radius may not be able to accomplish or to understand. Most of the warning sirens have been deactivated (except for ? two now maintained by a local community), so public warnings of an accident could be significantly hampered by those not having access to cell phone or internet notifications or those living in areas with spotty coverage, particularly if the accident occurs at night when radios are not on. This needs to be reevaluated by NextEra PBNP who, with local county emergency systems, are in charge of notification and evacuation plans.

The EIS states that SOARCA does not include assessment of aging nuclear plant facilities which will be included in the Safety Analysis of Point Beach. This makes the assessments of human health impacts from severe accidents for the two modeled plants less reliable looking at risks of nuclear power plants build to operate for four decades which are projected possibly to have extended lifespans to eight decades. This is particularly worrisome for Point Beach Unit 2 which in 2013 the NRC assessed as one of the most embrittled pressure vessels in nuclear plants still in operation. An assessment of PBNP's embrittlement is being accomplished by Next Era and the NRC with use of analytical techniques rather than direct metallurgy to test sample coupons from its reactors and other embrittled nuclear reactors that are now not operational. This use of computer modeling is not acceptable when direct assessment of structural integrity exists. In addition to this known embrittlement, leaving Point Beach at increased risk of a crack in the vessel with SCRAMs necessitating cold water injection to emergently cool the fuel rods, Point Beach also has a risk of a Turbine Missile Accident due to its unique alignment of turbines in relation to its other major buildings and structures. (See reports on the Turbine failure of Fermi 2 in Michigan reported on 12/25/1993). Point Beach should be required to install an energy-absorbing missile shield around its turbine even now to prevent this major disaster.

Finally, SOARCA does not include assessments of accidents involving spent nuclear fuel storage, but this is analyzed in a separate document. I

Ideally, the risk of accidents for a nuclear power plant should include issues with all structures of the plant, including its design flaws, its aging infrastructural issues and consequences of accidents both during operation and during and after decommissioning, especially in regards to procedures involving both onsite management and possible removal of spent fuel onsite to permanent storage.