



Nuclear Energy Oversight Project

*"Oversight of the U.S. Nuclear Regulatory Commission
to protect public health and safety and the environment"*

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Thomas Saporito
Executive Director

September 17, 2023

Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
(Sent via Electronic Mail)
MSHD.Resource@nrc.gov

**RE: 10 CFR 2.206 PETITION REQUESTING ENFORCEMENT ACTION BY THE U.S.
NUCLEAR REGULATORY COMMISSION**

The Nuclear Energy Oversight Project (NEOP) by and through its undersigned Executive Director (hereinafter "Petitioners") submit a 10 CFR 2.206 Petition requesting that the U.S. Nuclear Regulatory Commission (NRC) take enforcement action against the Florida Power & Light Company (FPL) or "licensee" as delineated below:

Background

By letter dated January 30, 2018, Florida Power & Light Company (FPL, the licensee) submitted to the U.S. Nuclear Regulatory Commission (NRC, the Commission) an application requesting subsequent license renewal (SLR) of the Turkey Point Nuclear Generating Unit Nos. 3 and 4 (Turkey Point, Turkey Point Units 3 and 4) renewed facility operating licenses (FPL 2018a). FPL subsequently supplemented its SLR application by letters dated February 9, 2018 (FPL 2018b), February 16, 2018 (FPL 2018c), March 1, 2018 (FPL 2018d), and April 10, 2018 (FPL 2018e). The Turkey Point Unit 3 initial renewed facility operating license (DPR-31) was set to expire at midnight on July 19, 2032, and the Turkey Point Unit 4 initial renewed facility operating license (DPR-41) was set to expire at midnight on April 10, 2033. In its SLR application, FPL requested subsequent renewed facility operating licenses for a period of 20 years beyond these expiration dates—i.e., July 19, 2052, for Turkey Point Unit 3 and April 10, 2053, for Turkey Point Unit 4.

The NRC has issued a notice to the public that a hearing request before the NRC

Atomic Safety & Licensing Board (ASLB) can be requested regarding this matter. However, petitioners do not reside within the boundary of the NRC's zone of interest to the TPN facility to obtain requisite standing to intervene before the ASLB. Therefore, this instant action is the only available means for petitioners to act on their safety concerns regarding this matter.

Requested Enforcement Action

Petitioners request that the NRC **DENY** the licensee's SLR for the TPN Units 3 and 4.

Basis and Justification

1. The TPN Units 3 and 4, were licensed for operation in 1972 and 1973 approximately 51 years ago and well beyond the two nuclear reactor's original 40-year safety design basis. Each nuclear reactor is contained in a stainless steel vessel which is several inches thick. During power operations, enriched uranium starts a fission process which splits atoms emitting billions of neutrons which strike the stainless steel vessel. Over time, this action degrades the toughness of the stainless steel vessel and could cause the vessel to become embrittled and crack which would result in a Loss of Coolant Accident (LOCA) and subsequent reactor meltdown and General Emergency Alert.
2. When the two TPN reactors were constructed, sample pieces of the stainless steel metal used in the vessel build, were strategically placed around each reactor's core with the intent to remove one or more of the samples over time to record the amount of damage caused by the neutrons – to insure that the integrity of the vessel would remain intact for continued licensed operations. But that process was only intended for the original 40-year safety design basis as there were not enough samples to continue that process beyond 40-years.
3. Over the years, the NRC collaborated with FPL and other NRC licensees to allow samples taken from other similar reactor vessels to be representative of the TPN reactor vessels so that NRC and FPL could extend the operation of the TPN reactors beyond their original 40-year safety design basis. As stated above, the TPN Units 3 and 4 are currently licensed for operation until the expiration dates of July 19, 2032 and April 10, 2033 respectively. The licensee is now requesting the NRC to extend licensed operations of the TPN Units 3 and 4 for an additional 20-years.
4. Although other reactors in the (participant licensee data sharing plan) may be similar in design, there can be no reasonable assurance that the TPN reactor vessels can be safely operated beyond their license expiration dates of July 19, 2032 and April 10, 2033 respectively for several reasons.
 - The exact position of the sample metals in other reactors differs from the TPN reactors; and
 - The stress on the reactor vessels in the other reactors differs from the stress on the TPN reactor vessels stemming from emergency shutdowns or “SCRAMS”; and

- The manner in which the sample metals are tested (Charpy Impact Testing) is flawed on several levels and cannot provide reasonable assurance of the measure of toughness of any reactor vessel.
5. Should one of the Turkey Point Nuclear Reactor vessels crack due to embrittlement – the loss of cooling water (LOCA) would result in an immediate reactor core meltdown which would release a huge amount of hydrogen into the concrete containment building. This hydrogen would cause a catastrophic explosion releasing radioactive particles throughout the state of Florida and beyond with the prevailing wind currents.
 6. Due to the dense population of approximately 2.8-million people near and around the TPN facility, evacuation due to a General Emergency such as a LOCA, is not feasible. During evacuations due to hurricanes, the state roads are filled with bumper to bumper traffic making it very difficult to leave the area in a timely manner. Sheltering in place during a reactor meltdown general emergency is not a reasonable solution due to the release of radioactive particles and radiation and would result in millions of deaths. The NRC is well-aware of the radioactive releases from the Fukushima nuclear accident (LOCA) which continues to this day.
 7. Projected Sea Level Rise: A report by the National Oceanic and Atmospheric Administration (NOAA) suggests that by the end of the century, sea levels in parts of Florida could rise by as much as 2 to 3 feet. To this extent, the TPN Units are vulnerable to being swamped which could result in a LOCA similar to the Fukushima LOCA event.
 8. **Safe alternatives to FPL's SLR exist** - such as residential home solar systems. To estimate the total power generation from homes in Florida if the majority installed 5 kWh solar systems with lithium-ion batteries and inverters, consideration of the following data is required:
 - **Number of Homes in Florida:** According to the U.S. Census Bureau, there were approximately 9.5 million housing units in Florida as of 2020.
 - **Percentage of Homes with Solar:** The percentage of homes that have installed 5 kWh solar systems with lithium-ion batteries and inverters is subject to factors like incentives, regulations, and individual homeowner choices.
 - **Sunlight and Solar Efficiency:** The actual power generation from solar panels depends on factors like sunlight hours and the efficiency of the solar panels. Florida generally receives a good amount of sunlight.
 - Presuming that just 10% of the housing units in Florida installed 5 kWh solar systems with batteries and inverters – the following estimates can be made:
 - 10% of the 9.5 million housing units in Florida is equal to 950,000 housing units.
 - If each of these homes has a 5 kWh solar system, they can generate 5 kWh of electricity per hour when the sun is shining, with an average of 5 hours of sunlight per day.

- So the Total Power Generation is $(950,000 \text{ homes} \times 25 \text{ kWh/day}) = 23,750,000 \text{ kWh/day}$ – or 23,750 MW per day. (This is the amount of power not drawn away from FPL's electric grid – because these homes are essentially self-sustaining and operating off-the-grid.
- If just 10% of homes in Florida had 5 kWh solar systems with lithium-ion batteries and inverters, and 50% of the generated power was returned FPL's electric grid, they could potentially return approximately 11,875 megawatts of power to FPL's electric grid on a daily basis.
- **Safe alternatives to FPL's SLR exist** such as estimating the total power generation from businesses in Florida if the majority installed 10 kWh solar systems with lithium-ion batteries and inverters involves similar considerations as estimating residential solar power generation as follows:
 - **Number of Businesses in Florida:** According to the U.S. Census Bureau, there were approximately 2.7 million businesses in Florida as of 2020.
 - **Percentage of Businesses with Solar:** We need to estimate the percentage of businesses that could install 10 kWh solar systems with batteries and inverters.
 - **Sunlight and Solar Efficiency:** The actual power generation from solar panels depends on factors like sunlight hours and the efficiency of the solar panels.
 - Presuming that only 5% of businesses in Florida installed 10 kWh solar systems with batteries and inverters, that would equate to $(2.7 \text{ million} \times 5\%)$ or 135,000 businesses.
 - If each of these businesses installed a 10 kWh solar system, they could generate 10 kWh of electricity per hour when the sun is shining. With an average of 5 hours of sunlight per day the daily energy generation for these businesses would be $(10 \text{ kWh/hour} \times 5 \text{ hours/day})$ or 50 kWh/day. So the Total Power Generation equates to $(135,000 \text{ businesses} \times 50 \text{ kWh/day})$ or 6,750,000 kWh/day which converts to 6,750 Mega-Watts of power per day. (This is the amount of power not drawn away from FPL's electric grid – because these businesses are essentially self-sustaining and operating off-the-grid.
 - To estimate the amount of power that could be returned to the electric grid from businesses in Florida if just 5% of them had 10 kWh solar systems with lithium-ion batteries and inverters, we'll use a similar approach as before.
 - **Daily Energy Generation per Business:** As previously calculated, each business with a 10 kWh solar system can generate 50 kWh per day during 5 hours of sunlight.
 - **Total Daily Energy Generation from Businesses with Solar:** As previously estimated, if 5% of businesses in Florida have solar systems, the 135,000 businesses with solar systems would generate 50 kWh each – resulting in the Total Daily Energy Generation of 6,750,000 kWh/day.
 - **Excess Energy Available for Grid Export:** Not all the power generated by these

solar systems will be used by the businesses themselves. Some of it will be returned to FPL's electric grid. The exact amount depends on how much power the businesses consume versus how much they generate. Presuming that 60% of the generated power is used within the businesses, and the remaining 40% is returned to the electric grid – the total power returned to FPL's electric grid would be 2,700 Mega-Watts per day.

Conclusion

- The two TPN Units produce 693 Mega-Watts of power each for a total power output capacity of 1,386 Mega-Watts.
- If just 10% of homes in Florida installed 5 kWh solar systems that would generate approximately 23,750 megawatts of power per day (a power reduction from FPL's electric grid) – and return approximately 11,875 mega-watts of power back to FPL's electric grid every day.
- If just 5% of businesses in Florida installed 10 kWh solar systems that would generate approximately 6,750 megawatts of power per day (a power reduction from FPL's electric grid) - and return approximately 2,700 mega-watts of power back to FPL's electric grid every day.
- Thus, the total power **reduction** from FPL's electric grid from residential home solar system and business solar systems is approximately (23,750 Mega-Watts + 6,750 Mega-Watts) = a **total of 30,500 Mega-Watts of power**.
- Moreover, the combined power generation from 10% of homes and 5% of businesses solar systems can return a total of **14,575 Mega-Watts to FPL's electric grid** - and the total power output from the TPN Units is only 1,386 Mega-Watts. Therefore, there is no need for the TPN Units to have their NRC operational licenses extended for another 20-years.

The adverse environmental impacts of the SLR for the TPN Units 3 and 4 (i.e., the continued operation of TPN for a period of 20-years beyond the expiration dates of the initial renewed licenses) are too enormous – therefore preserving the option of SLR for energy-planning decision-makers would be unreasonable.

For all the above stated reasons, Petitioners urge the NRC to take the requested enforcement action against its licensee FPL as described above to protect the health and safety of the public and to protect the environment.

For the Petitioners



Thomas Saporito
Executive Director

**** A copy of this electronic communication is being provided to the NRC Office of the Inspector General to enable that agency to monitor the actions of the NRC in this important matter to protect the health and safety of the public and to protect the environment from the catastrophic effects of a serious nuclear accident originating from a licensed commercial nuclear power plant regulated by the NRC.***

NRCExecSec Resource

From: Nuclear Energy Oversight Project <NEOP@gmx.com>
Sent: Sunday, September 17, 2023 11:43 AM
To: MSHD Resource
Cc: OIGHOTLINE Resource; NRCExecSec Resource
Subject: [External_Sender] 2.206 Petition (Turkey Point Nuclear Units 3 & 4)
Attachments: 2023.09.17 FPL Turkey Point 2.206 Petition.pdf

Importance: High

Please find the attached 2.206 petition dated Sept. 17, 2023 requesting NRC enforcement action against its licensee the Florida Power & Light Company (FPL).

Should you have any questions regarding this matter, please contact me at your convenience.

Please advise as of the status of this petition in accordance with NRC policy.

Sincerely,

Thomas Saporito

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