From: Elise Bennett <EBennett@biologicaldiversity.org>
Sent: Monday, November 22, 2021 9:24 PM
To: SaintLucieEnvironmental Resource
Subject: [External_Sender] NRC-2021-0197 – Scoping Comments on St. Lucie Plant Units 1 and 2
Attachments: 2021-11-22 - CBD Scoping Comments - St Lucie Units 1 and 2.pdf

Dear Ms. James, Mr. Rakovan, and Mr. Jordan,

On behalf of the Center for Biological Diversity, I submit the following scoping comments on the Nuclear Regulatory Commission's subsequent renewed licensing for Florida Power & Light Co.'s St. Lucie Plant Units 1 and 2. Copies of the literature cited can be downloaded from this link: https://diversity.box.com/s/skatmtbz73u93z2kv1ayzvxjw0jrzsmp. The link will remain active until December 22, 2021. If you have any questions or have difficulty accessing the literature, please contact me by email at ebennett@biologicaldiversity.org or by phone at (727) 755-6950.

Sincerely,

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Lois James
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U.S. Nuclear Regulatory Commission
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Re: NRC-2021-0197 – Scoping Comments on Subsequent Renewed Licensing of Florida Power & Light Co.'s St. Lucie Plant Units 1 and 2

Dear Ms. James, Mr. Rakovan, and Mr. Jordan,

On behalf of the Center for Biological Diversity, I submit the following National Environmental Policy Act (NEPA) scoping comments on the Nuclear Regulatory Commission's (NRC) subsequent renewed licensing for Florida Power & Light Co.'s (FPL) operating licenses for St. Lucie Plant Units 1 and 2, noticed for public comment in the Federal Register on October 22, 2021.[1] The St. Lucie Plant is located on a barrier island on Florida's Atlantic coast, and with the subsequent renewed licenses, Units 1 and 2 will continue to operate through 2056 and 2063, respectively.[2] The vulnerable siting and long-term nature of the licensing decision require NRC to review and analyze the project in the context of ongoing and future effects of climate change, including rising temperatures, sea level rise, and increased storm surge and flooding. Including a robust analysis of climate change and its interactions with St. Lucie Units 1 and 2 is critical to understanding the full environmental impact of the subsequent renewed license and identifying alternatives to the proposed action during the NEPA process. Therefore, we provide the following information regarding climate change and its effects and offer suggestions for how the NRC should review and apply this information to the review of the subsequent renewed licensing for St. Lucie Plant Units 1 and 2.

<u>Scientific Information Regarding Global Climate Change and Its Effects</u>

The IPCC Assessment Reports, U.S. National Climate Assessments, and tens of thousands of studies make clear that fossil-fuel driven climate change is a "code red for humanity," and that every additional ton of CO_2 and fraction of a degree of temperature rise matters (United Nations 2021). The widespread, intensifying, and often long-lived harms from climate change include soaring air and ocean temperatures; more frequent and intense heat waves, floods, and droughts; more destructive hurricanes; coastal flooding from sea level rise and increasing storm surge;

[1] 86 Fed. Reg. 58,701 (Oct. 22, 2021).
[2] *Id.* at 58,702.

accelerating species extinction risk; ocean acidification; and the collapse of coral reefs (Melillo et al. 2014; U.S. Global Change Research Program 2017).

Rising Temperatures

Global average surface temperature rose by 2°F (1.09°C) between 1850-1900 and 2011-2020, with larger increases over land than over the ocean (IPCC 2021, at SPM-5, SPM-6). Each of the last four decades has been successively hotter than any preceding decades since 1850 (IPCC 2021, at SPM-5, SPM-6). Since 2012, global warming has been especially pronounced, with the past five years (2016-2020) being the hottest five-year period since 1850 (IPCC 2021, at TS-8). Global temperatures of the last decade are likely the hottest it has been on Earth in 125,000 years (IPCC 2021, at SPM-9).

Global surface temperature will continue to increase until at least mid-century under all scenarios considered in the IPCC *Climate Change 2021* report (IPCC 2021, at SPM-17). Global warming will exceed 1.5°C and 2°C by 2100 unless deep reductions in CO_2 and other greenhouse gas emissions occur in the coming decades (IPCC 2021, at SPM-17). Compared to 1850-1900, global surface temperature by 2100 is very likely to be higher by 1.8°F to 3.2°F (1.0°C to 1.8°C) under the very low GHG emissions scenario considered (SSP1-1.9; CO_2 emissions reach net zero around 2050), by 3.8°F to 6.3°F (2.1°C to 3.5°C) in the intermediate scenario (SSP2-4.5; CO_2 emissions remain around current levels until 2050) and by 5.9°F to 10.2°F (3.3°C to 5.7°C) under the very high GHG emissions scenario (SSP5-8.5; CO_2 emissions double by 2050) (IPCC 2021, at SPM-17). It is believed that global surface temperature has not been at or above 4.5°F (2.5°C) higher than 1850-1900 in over 3 million years (IPCC 2021, at SPM-15–SPM-17).

In the United States average temperatures rose by 1.8°F (1.0°C) between 1901 and 2016, with the most rapid heating occurring after 1979 (U.S. Global Change Research Program at 17). U.S. temperatures are expected to rise by an additional 2.5°F (1.4°C), on average, by mid-century relative to 1976-2005, and record-setting hot years will become commonplace (U.S. Global Change Research Program 2017, at 11). By late century, much greater heating is projected, ranging from 2.8 to 7.3°F (1.6 to 4.1°C) under a lower emissions scenario and 5.8 to 11.9°F (3.2 to 6.6°C) under a higher emissions scenario (U.S. Global Change Research Program 2017, at 17, 136). The urban heat island effect—which is expected to strengthen as urban areas expand and become denser—will amplify climate-related warming even beyond those dangerous increases (U.S. Global Change Research Program 2017, at 17).

Increasing Frequency of Extreme Weather Events

Climate change is increasing the frequency and intensity of extreme weather events, particularly heat waves and heavy precipitation events (Coumou and Rahmstorf 2012, entire; IPCC 2012, entire; Herring et al. 2018, entire; U.S. Global Change Research Program 2017 at 18–20; IPCC 2021 at SPM-10). In the contiguous United States, extreme temperatures are expected to increase even more than average temperatures, with more intense heat waves and 20 to 30 more days per year above 90°F by mid-century for most regions under a higher emissions scenario (U.S. Global Change Research Program 2017 at 185, 199). Heavy precipitation has become more frequent and intense in most regions of the U.S. since 1901 (U.S. Global Change Research Program 2017, at 20), as more water vapor is available to fuel extreme rain and snowstorms as the world warms

(U.S. Global Change Research Program 2017, at 214). Heavy precipitation events are projected to continue to increase in frequency and intensity across the United States, with the number of extreme events rising by two to three times the historical average by the end of the century under a higher emissions scenario (U.S. Global Change Research Program 2017, at 207, 218).

A growing body of attribution studies (i.e., studies assessing how human-caused climate change may have affected the strength and likelihood of individual extreme events) has determined that human-caused climate change has not only intensified many recent extreme weather events, but that some extreme weather events could not have happened without human-induced climate change (Herring et al 2018, entire).

Climate change-related weather extremes are also weakening the ability of the terrestrial biosphere (vegetation and soil) to uptake carbon, a significant development because the terrestrial biosphere absorbs about 25% of anthropogenic carbon dioxide emissions (Green et al. 2019, entire). Droughts, heat waves and other extreme climate-related events reduce soil moisture, lowering carbon uptake now and projected into the future.

More Destructive Hurricanes

Climate change is increasing the destructive power of hurricanes by increasing their intensity, rainfall, and storm surge. Because hurricanes are fueled by heat, hotter ocean temperatures are increasing the strength of Atlantic hurricanes (Holland & Bruyère 2014, entire; Fraza & Elsner 2015, entire; U.S. Global Change Research Program 2017, at 257; U.S. Global Change Research Program 2018, at 74), and allowing them to intensify more quickly (Bhatia et al. 2019, entire). During 2016 to 2019, the U.S. suffered the longest streak of Category 5 hurricanes on record.

Hotter air also holds more moisture, causing heavier rainfall during hurricanes (Emanuel 2017, entire; Keellings & Hernández 2019, entire). For example, global warming is estimated to have made Hurricane Harvey's record rainfall 3.5 times more likely and increased its total rainfall by 15 to 38% (Risser & Wehner 2017, entire; Patricola & Wehner 2018, entire). If emissions are not reduced, hurricane rainfall is projected to increase by 15 to 35%, with wind speeds rising by as much as 25 knots (Patricola & Wehner 2018, entire). Rising sea levels due to climate change are also causing higher storm surge—the enormous walls of water pushed onto the coast by storms (Komar & Allan 2008, entire; Grinsted et al. 2012, entire). Large storm surge events of the magnitude of Hurricane Katrina have already doubled and are projected to increase in frequency by twofold to sevenfold for each degree Celsius of temperature rise (Grinsted et al. 2012, entire; Grinsted et al. 2013, entire). During 2017 and 2018 alone, five major hurricanes cost the United States at least 3,269 lost lives and $325 billion in damages (NOAA 2021, entire). As the climate crisis worsens, Atlantic hurricane intensity, rainfall and storm surge are projected to increase further, making hurricanes ever-more destructive (U.S. Global Change Research Program 2017, at 257; U.S. Global Change Research Program 2018, at 74, 95).

Rising Seas

Global average sea level has risen by seven to eight inches (0.2 m) since 1901 as the oceans have gotten hotter and land-based ice has melted (IPCC 2021, at SPM-6). Global average sea level has risen faster since 1900 than in any other century in at least the last 3,000 years (IPCC 2021, at

SPM-9). Sea level rise is accelerating in pace: the recent rate of sea level rise is nearly triple the rate between 1901-1971 (3.7 mm per year from 2006-2018 versus 1.3 mm per year from 1901-1971) (IPCC 2021, at SPM-6). The Fourth National Climate Assessment estimated that global sea level is very likely to rise by 1.0 to 4.3 feet by the end of the century relative to the year 2000, with sea level rise of 8.2 feet possible (U.S. Global Change Research Program 2018, at 487, 758). Sea level rise will be much more extreme without strong action to reduce greenhouse gas pollution. By the end of the century, global mean sea level is projected to increase by 0.8 to 2.6 feet under a lower emissions RCP 2.6 scenario, compared with 1.6 to 6 feet under a high emissions RCP 8.5 scenario (U.S. Global Change Research Program 2017, at 344).

According to the IPCC's *Climate Change 2021* report, even under a very low GHG emissions scenario, it is likely that global sea level rise by 2100 will be about one to two feet (0.28-0.55 m) compared to 1995-2014. Under an intermediate scenario, sea level rise is likely to be as high as 2.5 feet (0.44-0.76 m), and under a very high GHG emissions scenario it is likely to be close to three feet (0.37-0.86 m). Sea level rise above the likely range, approaching seven feet (2 m) by 2100 under a very high GHG emissions scenario cannot be ruled out due to uncertainty around the melting of ice sheets. Regardless, the impacts of sea level rise will be long-lived: under all emissions scenarios, sea levels will continue to rise for many centuries (IPCC 2021, at SPM-28).

Coastal Flooding from Sea Level Rise and Intensifying Storm Surge

Coastal regions are threatened by increasing flooding due to sea level rise and intensifying storm surge (Hauer et al. 2016, entire; NOAA Digital Coast Sea Level Rise Viewer). A nation-wide study estimated that approximately 3.7 million Americans live within three feet of high tide, putting them at extreme risk of flooding from sea level rise in the next few decades, with the most vulnerable residents in Florida, Louisiana, California, New York and New Jersey (Strauss et al. 2012, entire). Another study forecast that 4.2 million Americans would be at risk of flooding from three feet of sea level rise, while 13.1 million people would be at risk from six feet of sea level rise, driving mass human migration and societal disruption (Hauer et al. 2016, entire; Hauer et al. 2017, entire). An analysis of 136 of the world's largest coastal cities projected that global flood losses of US $6 billion per year in 2005 will grow to US $1 trillion or more per year by 2050 due to sea level rise and subsidence, if no adaptation actions are taken, with Miami, New York and New Orleans suffering the highest current and projected economic losses in the U.S. (Hallegatte et al. 2013).

Coastal flooding is becoming more damaging as Atlantic hurricanes and hurricane-generated storm surges grow more severe due to climate change (U.S. Global Change Research Program 2018, at 99). Sea levels on the U.S. East Coast from Cape Hatteras to Boston are rising three to four times faster than the global average (Sallenger et al. 2012, entire), which when combined with intensifying hurricanes and storm surge, is greatly increasing the flooding risk along the East Coast (Little et al. 2015, entire). Under a lower emissions RCP 4.5 scenario, storm surge is projected to increase by 25 to 47% along the U.S. Gulf and Florida coasts due to the combined effects of sea level rise and growing hurricane intensity (Balaguru et al. 2016, entire). The increasing frequency of extreme precipitation events is also compounding coastal flooding risk when storm surge and heavy rainfall occur together (Wahl et al. 2015, entire).

Since the 1960s, sea level rise has increased the frequency of high tide flooding by a factor of 5 to 10 for several U.S. coastal communities, and flooding rates are accelerating in many Atlantic and Gulf Coast cities (U.S. Global Change Research Program 2018, at 98–99). For much of the U.S. Atlantic coastline, a local sea level rise of 1.0 to 2.3 feet (0.3 to 0.7 m) would be sufficient to turn nuisance high tide events into major destructive floods (U.S. Global Change Research Program 2018, at 99). In Florida and Virginia, nuisance flooding due to sea level rise has already resulted in severe property damage and social disruption (Atkinson et al. 2013, entire; Wdowinski et al. 2016, entire). The frequency, depth, and extent of tidal flooding are expected to continue to increase in the future (U.S. Global Change Research Program 2018, at 75).

As the Fourth National Climate Assessment warned, "Although storms, floods, and erosion have always been hazards, in combination with rising sea levels they now threaten approximately $1 trillion in national wealth held in coastal real estate and the continued viability of coastal communities that depend on coastal water, land, and other resources for economic health and cultural integrity" (U.S. Global Change Research Program 2018, at 324).

Ocean Temperature Rise

U.S. and global oceans are being hard-hit by climate change. The world's oceans have absorbed more than 90% of the excess heat caused by greenhouse gas warming (IPCC 2021, at SPM-14), resulting in average sea surface warming of 1.6°F (0.88°C) from 1850-1900 to 2011-2020, and 1.1°F (0.60°C) from 1980 to 2020 (IPCC 2021 at 9-14). A 2019 study estimated that oceans are warming 40% faster than scientists projected, and that the rate of ocean warming is accelerating (Cheng et al. 2019, entire). Rapid warming of the oceans has widespread impacts and has contributed to increases in rainfall intensity, rising sea levels, the destruction of coral reefs, declining ocean oxygen levels, and ice loss from glaciers, ice sheets and polar sea ice (Cheng et al. 2019, entire). Global average sea surface temperature is projected to rise by 1.5°F (0.86°C) under a low emissions scenario (SSP1-2.6) and by 5.2°F (2.9°C) by the end of the century under a high emissions scenario (SSP5-8.5) (U.S. Global Change Research Program 2017, at 368).

Large-scale oxygen losses that create harmful low or no-oxygen zones have been developing in the coastal and open oceans due in large part to ocean warming (U.S. Global Change Research Program 2017, at 364, 377). In the past 50 years, open-ocean low-oxygen zones have expanded by an area the size the European Union, no-oxygen areas have more than quadrupled in size, and the number of low-oxygen sites near the coast has increased tenfold (Breitburg et al. 2018, entire).

Ocean Acidification

The global oceans have absorbed more than a quarter of the CO_2 emitted to the atmosphere by human activities, which has significantly increased the acidity of the surface ocean. Ocean acidification has reduced the availability of key chemicals—aragonite and calcite—that many marine species use to build their shells and skeletons (U.S. Global Change Research Program 2017, at 371–372). The ocean's absorption of anthropogenic CO_2 has already resulted in more than a 30% increase in the acidity of ocean surface waters, at a rate likely faster than anything experienced in the past 300 million years (Hönisch et al. 2012, entire; U.S. Global Change Research Program 2017, at 372, 374). Ocean acidity could increase by 150% by the end of the century if CO_2 emissions continue unabated (Orr et al. 2005; Feely et al. 2009, entire). Regions of the East and Gulf Coasts are vulnerable because of local stressors such as coastal eutrophication from fertilizer runoff and river discharge that increase acidification (Ekstrom et al. 2015, entire).

Ocean acidification negatively affects a wide range of marine species by hindering the ability of calcifying marine creatures like corals, oysters, and crabs to build protective shells and skeletons and by disrupting metabolism and critical biological functions (Fabry et al. 2008, entire; Kroeker et al. 2013, entire). The harms of ocean acidification are already being observed in wild populations, including reduced coral calcification rates in reefs worldwide (Albright et al. 2016, entire). An expert science panel concluded in 2016 that "growth, survival and behavioral effects linked to OA [ocean acidification] extend throughout food webs, threatening coastal ecosystems, and marine-dependent industries and human communities" (Chan et al. 2016, at 4).

Biodiversity Loss

Climate change is causing widespread harm to life across the planet, disrupting species' distribution, timing of breeding and migration, physiology, vital rates, and genetics—in addition to increasing species extinction risk (Warren et al. 2011, entire). Climate change is already affecting 82% of key ecological processes that underpin ecosystem function and support basic human needs (Scheffers et al. 2016, entire). Climate change-related local extinctions are widespread and have occurred in hundreds of species, including almost half of the 976 species surveyed (Wiens 2016, entire). Nearly half of terrestrial non-flying threatened mammals and nearly one-quarter of threatened birds are estimated to have been negatively impacted by climate change in at least part of their range (Pacifici et al 2017, entire).[3] Furthermore, across the globe, populations of terrestrial birds and mammals that are experiencing greater rates of climate warming are more likely to be declining at a faster rate (Spooner et al. 2018, entire). Genes are changing, species' physiology and physical features such as body size are changing, species are moving to try to keep pace with suitable climate space, species are shifting their timing of breeding and migration, and entire ecosystems are under stress (Parmesan & Yohe 2003, entire; Root et al. 2003, entire; Parmesan 2006, entire; Chen et al. 2011, entire; Maclean & Wilson 2011, entire; Warren et al. 2011, entire; Cahill et al. 2012, entire).

Species extinction risk will accelerate with continued greenhouse gas pollution. One million animal and plant species are now threatened with extinction, with climate change as a primary driver (IPBES 2019, entire). At 2°C compared with 1.5°C of temperature rise, species' extinction risk will increase dramatically, leading to a doubling of the number of vertebrate and plant species losing more than half their range, and a tripling for invertebrate species (IPCC 2018, entire). Numerous studies have projected catastrophic species losses during this century if climate change continues unabated: 15 to 37% of the world's plants and animals committed to extinction by 2050 under a mid-level emissions scenario (Thomas et al. 2004, entire); the potential extinction of 10 to 14% of species by 2100 (Maclean & Wilson 2011, entire); global extinction of 5% of species with 2°C of warming and 16% of species with business-as-usual

[3] The study concluded that "populations of large numbers of threatened species are likely to be already affected by climate change, and … conservation managers, planners and policy makers must take this into account in efforts to safeguard the future of biodiversity."

warming (Urban 2015, entire); the loss of more than half of the present climatic range for 58% of plants and 35% of animals by the 2080s under the current emissions pathway, in a sample of 48,786 species (Warren et al. 2013, entire); and the loss of a third or more of animals and plant species in the next 50 years (Román-Palacios & Wiens 2020, entire).

As summarized by the Third National Climate Assessment, "landscapes and seascapes are changing rapidly, and species, including many iconic species, may disappear from regions where they have been prevalent or become extinct, altering some regions so much that their mix of plant and animal life will become almost unrecognizable" (Melillo et al. 2014, entire).

Tipping Points and Compound Climate Extremes

The more fossil fuel pollution that is added to the atmosphere, the higher the risk of crossing planetary tipping points—abrupt and irreversible changes in Earth systems to states wholly outside human experience, resulting in severe physical, ecological and socioeconomic harms (IPCC 2021, at 4-76; U.S. Global Change Research Program 2017, at 32, 411–423; Lenton et al. 2008, entire). The Fourth National Climate Assessment concluded with very high confidence that tipping points and the compound effects of simultaneous extreme climate events have the potential to create unanticipated and potentially abrupt and irreversible "surprises" that become more likely as warming increases (U.S. Global Change Research Program 2017, at 32, 411–423; Lenton et al. 2008). The IPCC *Climate Change 2021* report similarly concluded that "the higher the warming level and the longer the duration of overshoot [beyond 1.5°C], the greater the risk of unexpected changes."

Warm-water coral reefs and Arctic ecosystems are already experiencing devastating regime shifts, and evidence indicates that climate system is nearing tipping points including the collapse of the West Antarctic ice sheet (Hansen et al. 2016, entire; U.S. Global Change Research Program 2017, at 420; Pattyn et al. 2018, entire; Garbe et al. 2020, entire), enormous CO_2 and methane release from thawing Arctic permafrost (U.S. Global Change Research Program 2017, at 303, 314–315, 419; Koven et al. 2011, entire; Commane et al. 2017, entire), and slowing of the Atlantic meridional overturning circulation which would worsen sea level rise along the U.S. east coast and cause global weather and climate disruptions (U.S. Global Change Research Program 2017, at 418; Boers 2021, entire). A 2019 expert review concluded in stark terms that "the evidence from tipping points alone suggests that we are in a state of planetary emergency: both the risk and urgency of the situation are acute" (Lenton et al. 2019, entire).

For example, research indicates that a critical tipping point important to the stability of the West Antarctic Ice Sheet has been crossed, and that rapid and irreversible collapse of the ice sheet is likely in the next 200 to 900 years (Joughin et al. 2014, entire; Mouginot et al. 2014, entire; Rignot et al. 2014, entire; DeConto & Pollard 2016, entire; Hansen et al. 2016, entire). According to the Fourth National Climate Assessment, "observational evidence suggests that ice dynamics already in progress have committed the planet to as much as 3.9 feet (1.2 m) worth of sea level rise from the West Antarctic Ice Sheet alone" and that "under the higher RCP8.5 scenario, Antarctic ice could contribute 3.3 feet (1 m) or more to global mean sea level over the remainder of this century, with some authors arguing that rates of change could be even faster" (U.S. Global Change Research Program 2017, at 420). Another tipping point is the release of carbon as CO_2 and methane from thawing Arctic permafrost, which has the potential to "drive continued warming even if human-caused emissions stopped altogether" (U.S. Global Change Research Program 2017, at 303, 314-315, 419; Koven et al. 2011, entire; Commane et al. 2017, entire). Evidence suggests that increased rainfall and meltwater from Arctic glaciers are causing the weakening of a major ocean current called the Atlantic meridional overturning circulation ("AMOC"). If the AMOC slows or collapses, the northeastern U.S. will see a dramatic increase in regional sea levels of as much as 1.6 feet (0.5 meters) (U.S. Global Change Research Program 2017, at 418; Boers 2021, entire). Another analysis warns that the Earth System is at risk of crossing a planetary threshold that could lock in a rapid pathway toward much hotter conditions ("Hothouse Earth") propelled by self-reinforcing feedbacks, and that this risk could exist at 2°C temperature rise and increase significantly with additional warming (Steffen et al. 2018, entire).

The disastrous effects of compound extreme events are already occurring, such as during Hurricane Sandy when sea level rise, abnormally high ocean temperatures, and high tides combined to intensify the storm and associated storm surge, and an atmospheric pressure field over Greenland steered the hurricane inland to an "exceptionally high-exposure location" (U.S. Global Change Research Program 2017, at 416).

<u>Recommendations for Applying Climate Science to St. Lucie Plant Units 1 and 2</u>

NRC should consider global climate change and its effects during scoping and in the environmental impact statement. The St. Lucie Plant's geographic location on a barrier island on Florida's Atlantic coast makes it particularly vulnerable to sea level rise and storm surge impacts. The site is located on Hutchinson Island and is surrounded by the Atlantic Ocean to the east, Herman Bay to the south, the Indian River to the west, and Big Mud Creek to the north.[4] The applicant's Environmental Report states that the terrain in the site is "essentially flat."[5] In addition, the St. Lucie Plant's cooling and auxiliary water systems also interact hydrologically with the Atlantic Ocean and are equipped with emergency cooling water intake that can withdraw water form the Indian River Lagoon via Big Mud Creek.[6]

Given the St. Lucie Plant's inherent vulnerability to sea level rise, storm surge, and storms of increasing intensity, along with its intimate connection to surrounding waters, NRC must consider the plant will impact the environment when coupled with the effects of climate change and sea level rise. In particular, sea level rise and stronger storm surge will contribute to increased likelihood of site inundation, accelerated saltwater intrusion into freshwater supplies, and greater susceptibility to storm surge impacts. Through inundation and flooding events, environmental contaminants could be transferred from the facility to surrounding areas, including the Atlantic Ocean, Herman Bay, Indian River, and Big Mud Creek. These types of potential impacts must be included in the environmental analysis.

When considering climate change impacts such as sea level rise, we urge you to analyze best and worst-case scenarios during the life of the plant under a subsequent renewed license. We also urge you to incorporate sea level rise planning such that it is protective of water resources, federally listed species, and habitat during the subsequent renewed license period. Failing to

[4] Applicant's Environmental Report at 3-52.
[5] Applicant's Environmental Report at 3-23.
[6] Applicant's Environmental Report at 2-5–2-6.

consider climate and sea level rise projections would disregard best available science and the legal requirements of NEPA.

NRC should also consider the increased vulnerability of the St. Lucie Plant's Units 1 and 2 to storm surge and hurricanes as a result of sea level rise. While sea level rise occurs slowly, impacts from storm surge can be sudden and immediate. Given future projections, it is extremely likely that water sea level will rise to or above levels of the canal system at some point in the project's lifetime. During storm and hurricane events, it is possible that water levels may breach the height of the berms surrounding the canals, causing water from the ocean, bay, or river to mix with the canal water before the water returns to the Atlantic. The result would be an increased presence of contaminated canal water in the ocean, bay, and/or river. Sea level rise and storm surge impacts should be considered in the environmental impact statement and in the analysis of cumulative impacts associated with the subsequent renewed license.

Finally, NRC should consider cumulative impacts of climate change and sea level rise on federally listed species on and around the St. Lucie Plant site. For instance, Hutchinson Island is an important rookery for loggerhead, green, and leatherback sea turtles, and the coast is designated critical habitat for the loggerhead sea turtle.[7] To the extent NRC considers alternatives that include protective measures in response to sea level rise, we urge NRC to consider nature-based solutions like living shorelines over options that involve coastal hardening, which could hinder sea turtle nesting and harm or harass other listed species.

Conclusion

Thank you for the opportunity to provide scoping comments on the subsequent renewed relicensing for St. Lucie Plant Units 1 and 2. For your convenience we will provide a link to PDF copies of the literature cited in this comment via email to *SaintLucieEnvironmental@nrc.gov*. If you have any questions about these comments or have difficulty accessing the literature cited, please do not hesitate to contact Elise Bennett at (727) 755-6950 or ebennett@biologicaldiversity.org.

Sincerely,

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[7] Applicant's Environmental Report at 3-137.

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