COLUMBIA LAW SCHOOL

SABIN CENTER FOR CLIMATE CHANGE LAW

March 9, 2018

Ms. Kelly Hammerle
National OCS Oil and Gas Leasing Program Manager
Bureau of Ocean Energy Management (VAM-LD)
45600 Woodland Road
Sterling, VA 20166-9216

Re: 2019-2024 Draft Proposed Outer Continental Shelf (OCS) Oil and Gas Leasing Program and Notice of Intent (NOI) to Prepare a Programmatic Environmental Impact Statement (PEIS), Docket IDs BOEM-2017-0074, MMAA104000

Dear Ms. Hammerle:

Thank you for this opportunity to comment on the Draft Proposed OCS Oil and Gas Leasing Program and NOI to prepare a Programmatic Environmental Impact Statement (PEIS). The Sabin Center for Climate Change Law (Sabin Center) is deeply concerned by the Bureau of Ocean Energy Management (BOEM)'s proposal to make more than 98% of the technically recoverable oil and gas resources in the OCS available for future exploration and development. We believe that this proposed expansion will prolong our nation's dependency on fossil fuels and will therefore undermine progress towards deep decarbonization of our economy—a goal that must be pursued in order to avoid the most catastrophic impacts of climate change. We are also concerned that BOEM will not fully account for greenhouse gas emissions and climate change effects in the environmental and economic analysis underpinning this decision. Our specific comments and recommendations for the environmental review are as follows:

1. In the PEIS for this action, BOEM should carefully evaluate potential greenhouse gas emissions generated from the production, transportation, and combustion of oil and gas produced from the OCS. BOEM's analysis of emissions should be thorough and transparent.
2. BOEM's NEPA analysis should inform BOEM's analysis of social and environmental costs in the Proposed Program document.
3. BOEM's PEIS should analyze how climate change impacts will affect leasing activities.
4. BOEM should not allow leasing in previously protected areas.

1. BOEM should carefully evaluate potential greenhouse gas emission impacts in the programmatic EIS for this action, including indirect (downstream) emissions from the transportation and combustion of the produced oil and gas.

In the PEIS for this action, BOEM should thoroughly evaluate the direct and indirect greenhouse gas emissions that will be generated as a result of the proposed expansion of OCS drilling. BOEM's emissions inventory should include direct emissions from OCS drilling as well as

downstream emissions from the transportation and combustion of produced oil and gas. Such analysis is required for NEPA proposals that involve fossil fuel extraction.[1] It is also consistent with BOEM's past NEPA analyses for the OCS leasing program.[2]

BOEM's emissions analysis should be transparent and accessible to decision-makers and the public. For example, BOEM should provide readers with a table which compares the direct, indirect, and total emissions from the proposed action and reasonable alternatives, including the no action alternative. The analysis should be located in a single section of the EIS. If BOEM relies on supplemental reports to inform its emissions analysis, the key findings from those supplemental reports should be fully incorporated into and summarized in the EIS.

For the sake of transparency, BOEM should disclose its estimates of total direct and downstream emissions in addition to any estimates of incremental emissions (that is, the emissions from the production, transportation, and combustion of oil and gas from the OCS, minus the emissions from the production, transportation, and combustion of substitute energy sources). BOEM should also be transparent about exactly how it estimated those incremental emissions. This will allow readers to evaluate BOEM's methodology and confirm the accuracy of BOEM's findings.

In addition, when analyzing incremental emission impacts (e.g., impacts from OCS oil and gas minus impacts from substitute energy sources), BOEM should consider: (i) the most current market forecasts from the U.S. Energy Information Administration (EIA) and other authoritative sources, (ii) the effect of climate change policies, including greenhouse gas regulations in other countries, decarbonization policies, and mid-century strategies, on fossil fuel demand, and (iii) the possibility that renewable energy sources would serve as a substitute for OCS oil and gas if the proposed expansion is not approved.

Finally, in order to better understand the significance of the emission impacts, BOEM should use the federal Social Cost of Carbon, Methane and Nitrous Oxide to estimate and disclose the potential costs associated with the emission impacts, both on an annual basis and over the lifetime of the project. Where there is uncertainty about the precise nature of a project's environmental effects (which is the case when evaluating the effects of a large quantity of greenhouse gas emissions released over many years), NEPA requires federal agencies to provide a "summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment."[3] In this case, the

[1] *See* High Country Conservation Advocates v. United States Forest Serv., 52 F. Supp. 3d 1174 (D. Colo. 2014); Diné Citizens Against Ruining Our Env't v. United States Office of Surface Mining Reclamation & Enf't, 82 F. Supp. 3d 1201 (D. Colo. 2015); WildEarth Guardians v. United States Office of Surface Mining, Reclamation & Enf't, 104 F. Supp. 3d 1208, 1230 (D. Colo. 2015); Wildearth Guardians v. U.S. Office of Surface Mining, Reclamation & Enf't, No. CV 14-103- BLG-SPW, 2015 WL 6442724 (D. Mont. Oct. 23, 2015) report and recommendation adopted in part, rejected in part sub nom. Guardians v. U.S. Office of Surface Mining, Reclamation & Enf't, No. CV 14-103-BLG-SPW, 2016 WL 259285 (D. Mont. Jan. 21, 2016). *See also* Sierra Club v. FERC, No. 16-1329 (D.C. Cir. Aug. 22, 2017) (requiring consideration of downstream emissions for natural gas pipeline review); Mid States Coalition for Progress v. Surface Transportation Board, 345 F.3d 520, 549 (8th Cir. 2003) (requiring consideration of downstream emissions for coal railway); N. Plains Res. Council, Inc. V. Surface Transportation Board, 668 F.3d 1067, 1080 (9th Cir. 2011) (requiring consideration of upstream emissions for coal railway).

[2] BOEM, Final Programmatic EIS for the 2017-2022 OCS Oil and Gas Leasing Program (2017).

[3] 40 C.F.R. § 1502.22(b)(1).

Social Cost of Carbon, Methane, and Nitrous Oxide are scientifically credible estimates of the societal costs of greenhouse gas emissions, developed through a lengthy process of interagency consultation and peer review,[4] and that cost is absolutely relevant to assessing the nature and significance of the proposed program's environmental consequences.

2. BOEM's NEPA analysis should inform BOEM's analysis of social and environmental costs in the proposed program document.

The emissions analysis conducted by BOEM in the EIS should inform BOEM's analysis of the proposed program's social and environmental costs that is required under the Outer Continental Shelf Lands Act (OSCLA). Specifically, BOEM's estimate of the "Net Social Value" of produced oil and gas should include the cost of greenhouse gas emissions. At minimum, BOEM should consider the cost of direct greenhouse gas emissions from the production of OCS oil and gas (BOEM has ignored these emissions in the draft program document without any valid explanation as to why they were ignored). BOEM also has the authority to consider the costs of emissions from the consumption of oil and gas in its OSCLA analysis.[5] BOEM's emission estimates should also be consistent across all of the various documents prepared for this program.

3. The PEIS Should Analyze the Environmental Effects of Climate Change Impacts on Lease Program Activities and the Potential for Adaptation Measures to Mitigate those Effects

Pursuant to its obligations under NEPA, BOEM must consider the potential for significant adverse environmental effects of sea level rise, storm surge, and increased severe storm impacts on oil and gas activities resulting from BOEM's OCS lease sales. These climate-related impacts will result in direct, indirect, and cumulative environmental effects and affect baseline conditions.[6] NEPA's implementing regulations provide that agencies must consider significant and reasonably foreseeable indirect and cumulative environmental impacts.[7] Agencies must define an appropriate baseline for considering projected environmental impacts; such a baseline

[4] See Interagency Working Group on the Social Cost of Greenhouse Gases, Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866 (May 2013, Revised August 2016); Interagency Working Group on the Social Cost of Greenhouse Gases, Addendum to Technical Support Document on Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866: Application of the Methodology to Estimate the Social Cost of Methane and the Social Cost of Nitrous Oxide (Aug. 2016).

[5] The D.C. Circuit has held that BOEM is not required to consider emissions from the combustion of oil and gas in its OCSLA cost-benefit analysis, but the court did not say that BOEM was forbidden from conducting such an analysis. Center for Biological Diversity v. U.S. Dept. of Interior, 563 F.3d 466 (2009).

[6] *See e.g.*, *infra* Parts 3.A-3.B.

[7] *See* 40 C.F.R. §§ 1508.7 (defining "cumulative impact"), 1508.8 (defining "effects" as including direct and reasonably foreseeable indirect effects), 1508.25(c) (providing that EISs must consider direct, indirect, and cumulative impacts); *see also* CEQ, *Considering Cumulative Effects under the National Environmental Policy Act* (1997) [hereinafter "Considering Cumulative Effects Under NEPA"], *available at* http://1.usa.gov/JLkM2I.

should incorporate anticipated environmental conditions.[8] Several federal courts have confirmed that NEPA regulations require federal agencies to evaluate the impacts of a changing climate on their actions.[9] Consideration of climate change impacts has accordingly become an integral part of the NEPA process.[10] Furthermore, the withdrawal of the CEQ guidelines does not affect judicially upheld obligations as was explicitly noted in the withdrawal notice.[11]

Other federal agencies have already begun to incorporate climate change adaptation concerns into their environmental review process. For instance, FERC required consideration of climate change impacts in connection with a proposed LNG export facility in flood-prone coastal Louisiana (the "Mississippi River LNG Project").[12] After the applicant for the Mississippi River LNG Project submitted draft resource reports to the Commission, FERC directed the applicant to supplement the reports with information regarding potential impacts of sea level rise and storm impacts for the design life of the facility.[13] Similarly, FERC's Environmental Assessments for the Dominion Cove Point LNG export facility on the Chesapeake Bay and the Cameron LNG facility in coastal Louisiana both consider several implications of climate change for their respective facilities.[14]

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[8] *See* Considering Cumulative Effects under NEPA, *supra* note 7, at 41; 40 C.F.R. 1502.15 (defining "affected environment").

[9] AquaAlliance, et al., v. U.S. Bureau of Reclamation, No. 1:15-CV-754-LJO-BAM, 2018 WL 903746, at *38-*39 (E.D. Cal. Feb. 15, 2018) (finding that the Bureau failed to adequately account for effects of climate change on water management project); Idaho Rivers United v. United States Army Corps of Engineers, No. C14-1800JLR, 2016 WL 498911, at *17 (W.D. Wash. Feb. 9, 2016) (finding the USACE analysis of the effect of climate change on sediment disposition was adequate); Kunaknana v. U.S. Army Corps of Engineers, No. 3:13-CV-00044-SLG, 2015 WL 3397150, at *10-*12 (D. Alaska May 26, 2015) (finding the USACE reasonably concluded, based on a supplemental information report, that a supplemental EIS was not necessary); Kunaknana v. U.S. Army Corps of Engineers, 23 F. Supp. 3d 1063, 1092-98 (D. Alaska 2014) (determining that USACE should consider whether to prepare supplemental EIS for issuance of § 404 permit in light of new information on climate change).

[10] *See e.g.*, *AquaAlliance*2018 WL 903746 at *38-*39 ("Nonetheless, the FEIS/R fails to address or otherwise explain how this information about the potential impacts of climate change can be reconciled with the ultimate conclusion that climate change impacts to the Project will be less than significant: . . [T]this amounts to a 'failure to consider an important aspect of the problem'. . .") (internal citation omitted).

[11] Withdrawal of Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews, 82 Fed. Reg. 16576 (April 5, 2017), *available at* https://www.federalregister.gov/documents/2017/04/05/2017-06770/withdrawal-of-final-guidance-for-federal-departments-and-agencies-on-consideration-of-greenhouse-gas ("The withdrawal of the guidance does not change any law, regulation, or other legally binding requirement.").

[12] Louisiana LNG Energy, LLC, Proposed Mississippi River LNG Project (PF14-17-000).

[13] Letter to Louisiana LNG Energy, LLC providing comments on Draft Resource Reports 2 through 9 re the Mississippi River LNG Project under PF14-17 (Nov. 24, 2014).

[14] *See* FERC, Environmental Assessment for the Cove Point Liquefaction Project, Dominion Cove Point LNG, LP Docket No. CP13-113-000, at 40, 169–171 (May 2014), http://bit.ly/1k5fNM0 ("Climate change in the northeast region could have two effects that may cause increased storm surges: temperature increase of the Chesapeake Bay waters, which would increase storm intensity; and a rising sea level. The final grade elevation of the Liquefaction Facilities Project site would range between 70 and 130 feet above mean sea level. Therefore, even with increased sea levels due to climate change and increased storm surge, the Project facilities would not be vulnerable to even a 100-year climate change-enhanced storm surge because of its significant elevation above sea level."); FERC, Environmental Assessment for the Cameron LNG Expansion Project, Cameron LNG, LLC Docket No. CP15-560-000, at 115 (Feb. 2016), https://perma.cc/7MA8-DW2W ("Climate change in the region would have two effects that may cause increased storm surges, increased temperatures of Gulf waters, which would increase storm intensity, and a rising sea level. In Louisiana, relative sea level changes have been estimated by the NOAA to be about 14 inches by 2050. This is greater than the global average because of regional ground subsidence. The Cameron LNG

BOEM should analyze climate change impacts to oil and gas infrastructure in the PEIS, rather than waiting until it performs environmental review for individual leases. While more refined research and analysis must be performed at the specific lease sales stage, BOEM's analysis of climate change impacts in the PEIS will inform its evaluation of individual lease applications and help the Bureau identify appropriate baseline standards for leases issued as part of the 2019-2024 Oil and Gas Leasing Program. Where uncertainty regarding potential climate change impacts exists, the PEIS can highlight the need for further research or location-specific analysis. Indeed, the Bureau has previously recognized that considering climate change impacts in a PEIS will allow it to make informed decisions about potential geographic exclusions and restrictions on leasing activities,[15] and acted on that information in its determination to exclude climate-sensitive areas from leasing under the 2017-2022 program.[16] Below is a summary of several climate change impacts and the risk that they pose to oil and gas infrastructure.

A. Sea Level Rise

As anthropogenic greenhouse gas emissions warm the planet, causing glaciers and ice sheets to melt and oceans to absorb increasing volumes of heat, global sea levels will continue to rise, and will do so at increasing rates.[17] In the next several decades, storm surges and high tides will combine with sea level rise and, in some locations, land subsidence to increase flooding, threatening coastal communities and industries.[18] Sea level rise is occurring along the eastern,

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Terminal is designed for a 500-year storm surge elevation level of 12.4 feet amsl. Given that the Expansion Project's process equipment minimum elevation point of support would be 12.5 feet amsl and the LNG storage tank (T-205) would be 14.0 amsl at top of the elevated pile cap, climate change-enhanced sea level rise and subsidence are considered adequately addressed in the Expansion Project design.").

[15] U.S. DEPT. OF INTERIOR, 2017-2022 OUTER CONTINENTAL SHELF OIL AND GAS LEASING DRAFT PROPOSED PROGRAM 6-39 (Jan. 2015), *available at* http://www.boem.gov/2017-2022-DPP/ (stating that "[t]he PEIS will… address the issue of climate change at the programmatic level…[and] consider potential geographic exclusions and restrictions on leasing activities for the 2017–2022 Program").

[16] U.S. DEPT. OF INTERIOR, 2017-2022 OUTER CONTINENTAL SHELF OIL AND GAS LEASING FINAL PROPOSED PROGRAM S-8—S-9 (Nov. 2016) [hereinafter "2017-2022 Final OCS Leasing Program"], *available at* https://www.boem.gov/National-OCS-Program-for-2017-2022/ ("The decision to remove the Arctic OCS lease sales from the Proposed Final Program was informed by environmental and scientific information demonstrating the unique character of the area…Current and predictive information shows that climate change-induced temperature increases are occurring fastest in the polar regions, resulting in a disproportionate amount of changes to the physical, biological and chemical environments, such as alteration of species distribution, reduction in seasonal ice cover, and loss of permafrost. Loss of sea ice coverage reduces the available habitat for ice-dependent species such as polar bears and Pacific walrus. Such conditions and stressors may increase the vulnerability of these environmental resources and reduce their resilience to impacts of OCS oil and gas activities. Additionally, the remote nature of the Arctic program areas, the lack of widespread infrastructure, and the presence of sea ice for a large part of the year also make Arctic coastal zones more vulnerable to impacts from oil spills because of the challenges associated with conducting cleanup activities in the event of an oil spill. . .").

[17] Walsh et al., *Ch. 2: Our Changing Climate*, in Climate Change Impacts in the United States: The Third National Climate Assessment at 44 (J. M. Melillo et al., eds., U.S. Global Change Research Program, 2014) [hereinafter "Third National Climate Assessment Chapter 2"]; *See also* Wuebbles, D.J.,et al., 2017: Executive summary, in Climate Science Special Report: Fourth National Climate Assessment, Volume I 12-34 (Wuebbles, D.J., et al. eds., U.S. Global Change Research Program, 2017).

[18] Third National Climate Assessment Chapter 2, *supra* note 17, at 45; Kate Gordon et al., The Risky Business Project, *Risky Business: The Economic Risks of Climate Change in the United States* at 20 (2014) [hereinafter "Risky Business"], *available at* http://bit.ly/1GxEdZc.

western, and gulf coasts of the U.S. and occurring particularly rapidly along sections of the western gulf coast.[19]

Many sources provide current and credible data regarding sea level rise, storm surge, and severe storm impacts. As relevant examples, SCCCL points the BOEM's attention to:

- Intergovernmental Panel on Climate Change ("IPCC"), Chapter 2.2.3 Ocean, cryosphere and sea level. In Climate Change 2014 Synthesis Report, Fifth Assessment Report, at 65, *available at* http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_LONGERREPORT_Corr2.pdf. [20]

- IPCC, Chapters 5.3.3.1 Severe Storms and 5.3.3.2 Extreme Sea Levels. In Climate Change 2014: Impacts, Adaptation, and Vulnerability, *available at* http://www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap5_FINAL.pdf.[21]

- The National Climate Assessment, at 371-395 (Northeast), 396-417 (Southeast), and 514-536 (Alaska), *available at* http://nca2014.globalchange.gov/.[22]

- U.S. Global Change Research Program, Climate Science Special Report: Fourth National Climate Assessment, Volume I, at 333-363, *available at* https://science2017.globalchange.gov/.[23]

- Climate Central, Surging Seas: Sea Level Rise Analysis, *available at* http://sealevel.climatecentral.org; Climate Central, Surging Seas: Sea level rise, storms & global warming's threat to the US coast (2012), *available at* http://slr.s3.amazonaws.com/SurgingSeas.pdf; Climate Central Surging Seas State Reports for: Pennsylvania;[24] Louisiana;[25] Mississippi;[26] Alabama;[27] Virginia;[28]

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[19] NOAA, *U.S. Sea Level Trend Map* (2016) [hereinafter "NOAA Sea Level Trend Map"], *available at* https://tidesandcurrents.noaa.gov/sltrends/slrmap.html.

[20] J. A. Church et al., *Sea Level Change*, in CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS. CONTRIBUTION OF WORKING GROUP I TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE [T.F. Stocker et al., eds., Cambridge University Press 2013).

[21] P. P. Wong et al., *Coastal systems and low-lying areas,* in CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY. PART A: GLOBAL AND SECTORAL ASPECTS, Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change 361-409 (C. B. Field et al. eds., Cambridge University Press 2014).

[22] U.S. Global Change Research Program, 2014: Climate Change Impacts in the United States: The Third National Climate Assessment (Melillo, Jerry M. et al., eds., 2014) [hereinafter "The Third National Climate Assessment"].

[23] Sweet, W.V. et al., *Sea Level Rise*, in 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I 333-363 (Wuebbles, D.J., et al. eds., U.S. Global Change Research Program, 2017).

[24] Climate Central, *Pennsylvania and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2016), http://sealevel.climatecentral.org/uploads/ssrf/PA-Report.pdf.

[25] Climate Central, *Louisiana and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2015), http://sealevel.climatecentral.org/uploads/ssrf/LA-Report.pdf.

[26] Climate Central, *Mississippi and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2015), http://sealevel.climatecentral.org/uploads/ssrf/MS-Report.pdf.

[27] Climate Central, *Alabama and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2015), http://sealevel.climatecentral.org/uploads/ssrf/AL-Report.pdf.

[28] Climate Central, *Virginia and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2014), http://sealevel.climatecentral.org/uploads/ssrf/VA-Report.pdf.

Maryland;[29] Washington D.C.;[30] New England;[31] New York;[32] New Jersey;[33] Delaware;[34] California, Oregon, Washington;[35] North Carolina;[36] South Carolina;[37] Florida;[38] Climate Central Surging Seas State Fact Sheets for: Georgia[39] and Texas.[40]

- Risky Business: The Economic Risks of Climate Change in the United States, *available at* https://perma.cc/U62D-KRVG.[41]

- AWF/AEC/Entergy, Building a Resilient Energy Gulf Coast: Executive Report *available at* https://perma.cc/NZ33-9ZUC. [42]

B. Increasing Frequency and Severity of Hurricanes and Tropical Storms

Since the early 1980's, Atlantic hurricane activity has substantially increased by measures including intensity, frequency, and duration as well as the number of strongest (Category 4 and 5) storms.[43] Warming sea surface temperatures in the Atlantic are linked to this increase in

[29] Climate Central, *Maryland and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2014), http://sealevel.climatecentral.org/uploads/ssrf/MD-Report.pdf.
[30] Climate Central, *Washington D.C. and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2014), http://sealevel.climatecentral.org/uploads/ssrf/DC-Report.pdf.
[31] Climate Central, *New England and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2014), http://sealevel.climatecentral.org/uploads/ssrf/NewEngland-Report.pdf.
[32] Climate Central, *New York and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2013), http://sealevel.climatecentral.org/uploads/ssrf/NY-Report.pdf.
[33] Climate Central, *New Jersey and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2012), http://sealevel.climatecentral.org/uploads/ssrf/NJ-Report.pdf.
[34] Climate Central, *Delaware and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2014), http://sealevel.climatecentral.org/uploads/ssrf/DE-Report.pdf.
[35] Climate Central, *California, Oregon, Washington and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2014), http://sealevel.climatecentral.org/uploads/ssrf/MD-Report.pdf.
[36] Climate Central, *North Carolina and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2014), http://sealevel.climatecentral.org/uploads/ssrf/Report-CA-OR-WA.pdf.
[37] Climate Central, *South Carolina and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2014), http://sealevel.climatecentral.org/uploads/ssrf/SC-Report.pdf.
[38] Climate Central, *Florida and the Surging Sea: A vulnerability assessment with projections for sea level rise and coastal flood risk* (2013), http://sealevel.climatecentral.org/uploads/ssrf/FL-Report.pdf.
[39]Climate Central, *Facts and findings: Sea level rise and storm surge threats for Georgia* (2012), http://slr.s3.amazonaws.com/factsheets/Georgia.pdf.
[40] Climate Central, *Facts and findings: Sea level rise and storm surge threats for Texas* (2012), http://slr.s3.amazonaws.com/factsheets/Texas.pdf.
[41] Kate Gordon et al., The Risky Business Project, *Risky Business: The Economic Risks of Climate Change in the United States* at 20 (2014).
[42] America's Wetland Foundation, America's Energy Coast, and Entergy, *Building a Resilient Energy Gulf Coast: Executive Report* (2010), www.entergy.com/ content/our_community/environment/GulfCoastAdaptation/ Building_a_Resilient_Gulf_Coast.pdf.
[43] The Third National Climate Assessment, *supra* note 22, at 41-42; Christensen, J.H., et al., *Climate Phenomena and their Relevance for Future Regional Climate Change*, in Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Stocker, T.F., et al. eds.)(See especially 14.3.4-5, 14.6, 14.8.3); *See* also, Kossin, J.P.et al., *Extreme storms*, in 2017: Climate Science Special Report: Fourth National Climate Assessment, Volume I 257-276 (Wuebbles, D.J., et al. eds., U.S. Global Change Research Program, 2017) [hereinafter "NCA 4 Extreme Storms"].

hurricane activity.[44] Human-induced emissions of heat-trapping gases and particulate pollution influence these local sea temperatures.[45] As noted in the above the combination of sea level rise with more severe and frequent hurricanes will affect storm surge and coastal damages, especially in the Gulf Coast. The previously listed resources describe these impacts and costs.
The 2017 hurricane season was particularly catastrophic with 17 named storms, 10 of which became hurricanes, including three category 4 storms that made landfall in the U.S. [46] By early estimates it is the most costly hurricane season on record in the U.S.[47] Global models project further increases in intensity, precipitation rate, and wind speed for tropical cyclones over the 21st Century.[48]

C. Risks to Oil & Gas Infrastructure

There is little question that climate change presents significant risks to infrastructure associated with oil and gas exploration and production activities in the OCS and the transport of extracted resources to coastal communities.[49] In the Beaufort and Chukchi Seas in Alaska, artificial islands and causeways built for offshore energy development are expected to become increasingly vulnerable to inundation from sea level rise and damage from storm surges.[50]In the Gulf Coast, sea level rise is likely to undermine the potential for energy resource development in the OCS as capacity to maintain onshore and offshore support facilities and transportation networks is compromised.[51] Severe storms have damaged offshore platforms and drastically reduced oil and gas production.[52] The Atlantic seaboard, which is expected to experience sea level rise and increased hurricane activity, is similarly at risk of damage to energy infrastructure.[53] BOEM should assess the projected range of sea level rise and storm surge, and the projected likelihood of severe storms, throughout the life of the oil and gas infrastructure that will be built as a result of new lease sales and identify ways to prepare for climate change-related risks.

While climate change was addressed in the PEIS for the 2017-2022 leasing program, BOEM did not analyze the potential impacts of climate change on oil and gas infrastructure and the potential environmental effects that could result. The PEIS for the 2019-2024 leasing program should include an updated analysis of climate change impacts, and it should specifically discuss

[44] *Id*.
[45] *Id*.
[46] Brian Sullivan, *The Most Expensive U.S. Hurricane Season Ever: By the Numbers*, Bloomberg (Nov. 26, 2017), *available at* https://perma.cc/R3JM-PXAY.
[47] *Id.* (estimating $202.6 billion in U.S. damages for the 2017 hurricane season); *see also* National Oceanic and Atmospheric Administration, National Centers for Environmental Information (NCEI), U.S. Billion-Dollar Weather and Climate Disasters (2018), *available at* https://www.ncdc.noaa.gov/billions.
[48] *Supra* note 43, NCA 4 Extreme Storms.
[49] V. Burkett, *Global Climate Change Implications for Coastal and Offshore Oil and Gas Development*, 39 ENERGY POLICY 7719 (2011); U.S. ENERGY SECTOR VULNERABILITIES TO CLIMATE CHANGE AND EXTREME WEATHER, U.S. Department of Energy, 28-29 (Craig Zamuda et al., 2013) [hereinafter "DOE U.S. Energy Sector Vulnerabilities"].
[50] AN EVALUATION OF THE SCIENCE NEEDS TO INFORM DECISIONS ON OUTER CONTINENTAL SHELF ENERGY DEVELOPMENT IN THE CHUKCHI AND BEAUFORT SEAS, ALASKA, U.S. Geological Survey Circular 1370, 102 (Leslie Holland-Bartels & Brenda Pierce eds., 2011).
[51] The Third National Climate Assessment, *supra* note 22, at 119, 401 (citing Burkett, *supra* note 49).
[52] DOE U.S. Energy Sector Vulnerabilities, *supra* note 49, at 3, 32 (discussing damage to oil and gas infrastructure and impact on production from Hurricanes Isaac, Gustave, Ike, Katrina, and Rita).
[53] The Third National Climate Assessment, *supra* note 22, at 9, 41-42, 45; DOE U.S. Energy Sector Vulnerabilities, *supra* note 49, at 4.

potential adverse impacts on the oil and gas activities likely to be performed under new leases issued by BOEM. For example, the PEIS should address whether sea level rise and severe storms will damage platforms or disrupt transportation networks in the OCS of Alaska, the Gulf of Mexico, and the Atlantic Ocean.[54]

In sum, sea level rise, increased storm surge, and severe storm events due to climate change pose foreseeable risks to the oil and gas infrastructure that will be built as a result of BOEM's lease sales. However, the 2019-2024 Oil and Gas Leasing Program NOI does not identify climate change adaptation as a significant issue for analysis in the PEIS. BOEM must consider such impacts to adequately protect the infrastructure built as a result of oil and gas lease sales from future climate change impacts and to fulfill its obligations under NEPA.

4. BOEM Should Not Allow Leasing in Previously Protected Areas.

The 2017-2022 Proposed Final Program determined leasing was not appropriate in the Chukchi and Beaufort Sea regions, finding these environments were highly sensitive and industry had shown little previous interest in leasing these areas.[55] As climate change continues it will further impact these delicate ecosystems[56] as well as the endangered species[57] and subsistence lifestyles[58] dependent on them. In recognition of the importance of protecting these ecosystems, species, and subsistence practices, President Obama withdrew these areas from future leasing.[59]

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[54] *See* Burkett, *supra* note 49.

[55] 2017-2022 Final OCS Leasing Program, *supra* note 16, at S-1—S-11 (Nov. 2016), *available at* https://www.boem.gov/National-OCS-Program/; *see also* U.S. DEPT. OF INTERIOR, 2017-2022 OUTER CONTINENTAL SHELF OIL AND GAS LEASING PROGRAM FINAL PROGRAMMATIC EIS, Chapter 4: Affected Environment & Impact Assessment 4-1—4-166, Appendix C: Supporting Information for Chapter 4: the Affected Environment (Nov. 2016)[hereinafter "2017-2022 OCS LEASING Final PEIS"], *available at* https://www.boem.gov/National-OCS-Program/.

[56] *Id*.; The Third National Climate Assessment, *supra* note 22, at 515-522 (describing impacts of climate change on Alaska).

[57] The Third National Climate Assessment, *supra* note 22, at 518 (noting impact of declining sea ice on endangered polar bears and walrus); 2017-2022 Final OCS Leasing Program, *supra* note 16, at S-8—S-9 (noting presence of endangered species and impacts of climate change on those species in regard to the decision to remove the Arctic OCS lease sales from the Proposed Final Program for 2017-2022). 2017-2022 OCS Leasing Final PEIS, *supra* note 55, Chapter 4: Affected Environment & Impact Assessment, Appendix C: Supporting Information for Chapter 4: the Affected Environment. Other federal entities already consider the impacts of climate change on endangered species whose habitat overlaps with offshore oil and gas leasing activity. The Supreme Court recently denied certiorari review of the Ninth Circuit's decisions that the National Marine Fisheries Service acted reasonably to protect two types of seal species under the Endangered Species Act because those species are likely to become endangered by the end of the century due to sea ice loss and other climate change impacts. Alaska Oil & Gas Ass'n v. Pritzker, 840 F.3d 671, 674 (9th Cir. 2016), *cert. denied sub nom.* Alaska v. Ross, No. 17-118, 2018 WL 491541 (U.S. Jan. 22, 2018), and *cert. denied sub nom.* Alaska Oil & Gas Ass'n v. Ross, No. 17-133, 2018 WL 491542 (U.S. Jan. 22, 2018).

[58] The Third National Climate Assessment, *supra* note 22, at 523 (describing effects of climate change on native communities in Alaska); *see also* 2017-2022 OCS Leasing Final PEIS, *supra* note 55, at 4-11—4-13, 4-76—478 (describing how climate change and OCS leasing activities affect Alaskan native communities' subsistence practices and health).

[59] Presidential Memorandum on Withdrawal of Certain Portions of the United States Arctic Outer Continental Shelf from Mineral Leasing (Dec. 20, 2016), *available at* https://www.gpo.gov/fdsys/pkg/DCPD-201600860/pdf/DCPD-201600860.pdf; Exec. Order No. 13754, 81 Fed. Reg. 90669, (Dec. 9, 2016), *available at*

The Trump Administration lacks the legal authority to lease these areas subsequent to the withdrawals.[60]

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Thank you for the opportunity to submit these joint comments on the Draft Proposed OCS Oil and Gas Leasing Program and NOI to prepare a PEIS. Please feel free to contact SCCCL with any questions.

Sincerely,

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https://www.gpo.gov/fdsys/pkg/DCPD-201600836/pdf/DCPD-201600836.pdf (establishing a Northern Bering Sea Climate Resilience Area).

[60] League of Conservation Voters v. Trump, Docket No. 3:17-cv-00101, (D. Alaska May 3, 2017), *available at* http://climatecasechart.com/case/league-conservation-voters-v-trump/; s*ee also* Congressional Research Legal Sidebar WSLG1799, Trump's Executive Order on Offshore Energy: Can a Withdrawal be Withdrawn? (May 5, 2017), *available at* https://fas.org/sgp/crs/misc/IN10698.pdf (raising the question of whether Presidents have the authority to revoke a withdrawal under OCSLA Section 12(a)).