COLUMBIA LAW SCHOOL

SABIN CENTER FOR CLIMATE CHANGE LAW

**Filed Electronically**
Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, DC 20426

November 12, 2015

**RE: Planned Alaska LNG Project; Notice of Intent to Prepare an Environmental Impact Statement for the Planned Alaska LNG Project (PF14–21–000)**

Secretary Bose:

The Sabin Center for Climate Change Law ("SCCCL")[1] submits these comments on the scope of the proposed environmental impact statement ("EIS") for the Alaska LNG Project, announced by the Federal Energy Regulatory Commission ("FERC" or the "Commission") in March of 2015.

For the limited purposes of these comments, SCCCL takes no position on the export of liquefied natural gas ("LNG") or on whether FERC should approve the Alaska LNG Project (the "Project"). Rather, consistent with the scoping process's goal of identifying significant issues for FERC to consider, SCCCL's comments focus on the potential impacts of climate change on the Project—impacts not identified in FERC's Notice of Intent.

## NEPA and Climate Change

Pursuant to its obligations under the National Environmental Policy Act ("NEPA"), the Commission must consider the environmental impacts of (1) sea level rise, sea ice loss, and associated storm surge, flooding, and coastal erosion risks, (2) thawing ice rich permafrost ("IRP") or thermokarst, and (3) indirect impacts of upstream and downstream Project-related activities. NEPA's implementing regulations provide that agencies must consider significant and reasonably foreseeable indirect and cumulative environmental impacts.[2] The position of the Council on Environmental Quality ("CEQ") aligns with the holdings of several federal courts on this point: NEPA regulations require federal agencies to evaluate the climate change-related impacts of their actions[3]—meaning both impacts that give rise to climate change and impacts

[1] The Sabin Center for Climate Change Law at Columbia Law School develops legal techniques to fight climate change, trains law students and lawyers in their use, and provides the public with up-to-date resources on key topics in climate law and regulation. SCCCL works closely with the scientists at Columbia University's Earth Institute and with governmental, nongovernmental, and academic organizations. *See* http://web.law.columbia.edu/climate-change. Please contact SCCCL for assistance locating any sources.

[2] *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.

[3] Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews [hereinafter "2014 Draft Guidance"], 79 Fed. Reg. 77801 (Dec. 24, 2014) (enclosed), *available at* http://1.usa.gov/1CeEb1s; *Ctr. for Biological Diversity v. Nat'l Highway*

arising from a changing climate. Furthermore, the Commission must consider sea level rise, ice loss, and related storm surge potential, as well as thermokarst, as future baseline environmental conditions.[4] That is, CEQ guidelines make clear that agencies must define an appropriate baseline for considering projected environmental impacts and that such a baseline should incorporate anticipated environmental conditions.[5]

In addition to what NEPA requires, federal and state law also support consideration of climate change adaptation in the proposed EIS. President Obama has issued an executive order regarding adaptation, which directs agencies to prepare for the impacts of climate change by integrating consideration of climate change into agency operations and overall mission objectives.[6] More recently, the President signed an executive order directing federal agencies to adopt new flood elevation standards—standards that take climate change into account—for the siting, design, and construction of federal projects.[7] The Department of Defense ("DOD") also intends to adapt to the risks of climate change by "integrating climate change considerations into [the DOD's] plans, operations, and training across the Department…."[8]

At the state level, the Alaska Legislature passed legislation in 2006 creating the Alaska Climate Impact Assessment Commission,[9] which issued a 2010 report that highlights vulnerabilities to infrastructure investments arising from thawing sea ice, sea level rise, and the thawing of permafrost.[10]

Two further sources of federal guidance direct the Commission to assess climate change impacts. First, the Securities and Exchange Commission ("SEC") has issued guidance regarding publicly traded companies' obligation to disclose the impacts that climate change may have on their operations.[11] FERC can facilitate such disclosure by conducting an analysis of climate change impacts on the proposed pipeline. Second, CEQ has proposed, but not yet finalized, revised guidance that would expressly call for EISs prepared pursuant to NEPA to consider

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*Traffic Safety Admin.*, 538 F.3d 1172, 1215-1217 (9th Cir. 2008) (finding that "[t]he impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct"); *Mid States Coal. for Progress v. Surface Transp. Bd.*, 345 F.3d 520, 548-50 (8th Cir. 2003) (finding that degradation in air quality was a reasonably foreseeable indirect effect of a project that would increase the supply of coal to power plants); *High Country Conservation Advocates v. United States Forest Serv.*, No. 13-CV-01723-RBJ, 2014 WL 2922751, at *8-11, 13-15 (D. Colo. June 27, 2014) (holding that it was arbitrary and capricious for federal agencies to omit analysis of GHG emissions and related costs in EISs for mining exploration projects).

[4] *See* Considering Cumulative Effects under NEPA, *supra* note 2, at 41; 40 C.F.R. 1502.15 (defining "affected environment"); 2014 Draft Guidance, *supra* note 3, at 21.

[5] *Id.*

[6] Exec. Order No. 13,653, 78 Fed. Reg. 66817 (Nov. 1, 2013).

[7] Exec. Order No. 13,690, 80 Fed. Reg. 6424 (Jan. 30, 2015).

[8] Department of Defense, *Climate Change Adaptation Roadmap* (2014), *available at* http://bit.ly/1gDeNx9.

[9] Fla. Stat. Ann. § 163.3161, *et seq*.

[10] Alaska's Climate Change Strategy: Addressing Impacts in Alaska, Final Report Submitted by the Adaptation Advisory Group to the Alaska Climate Change Sub-Cabinet (Jan. 2010), *available at* http://bit.ly/1kbDB0W.

[11] SEC, *Commission Guidance Regarding Disclosure Related to Climate Change* (2010) ("Significant physical effects of climate change… have the potential to affect a registrant's operations and results. For example, severe weather can cause catastrophic harm to physical plants and facilities and can disrupt manufacturing and distribution processes…. Registrants whose businesses may be vulnerable to severe weather or climate related events should consider disclosing material risks of, or consequences from, such events in their publically filed disclosure documents."), *available at* http://www.sec.gov/rules/interp/2010/33-9106.pdf.

future climate impacts on projects.[12] The Draft NEPA Guidance clarifies that climate change adaptation and resilience are important considerations and instructs agencies to identify the affected environment based on available climate change projections for the expected lifespan of the proposed project.[13]

FERC itself has already recognized the relevance and importance of climate change impacts to similar and similarly situated facilities elsewhere. For instance, FERC recently required consideration of climate change impacts in connection with a proposed LNG export facility in flood-prone coastal Louisiana (the "Mississippi River LNG Project").[14] 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.[15] Similarly, FERC's Environmental Assessment—not even a full EIS—of the Dominion Cove Point LNG export facility on the Chesapeake Bay considers several implications of climate change for that facility.[16] Nothing about the Alaska LNG Project makes it less susceptible to climate change than these earlier examples of FERC-licensed LNG infrastructure projects; indeed, because it exposed to more numerous and severe effects of climate change, its EIS must take them into account.

### 1. Sea Level Rise and Sea Ice Loss

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] In Alaska, the loss of sea ice is an additional and amplifying factor to consider when assessing the effects of sea level rise and sea warming on coastal facilities.[19]

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[12] 2014 Draft Guidance, *supra* note 3.
[13] *Id.* at 21–23.
[14] Louisiana LNG Energy, LLC, Proposed Mississippi River LNG Project (PF14-17-000).
[15] 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) (enclosed).
[16] *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.").
[17] Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program 44 (Jerry M. Melillo et al., 2014) [hereinafter "National Climate Assessment"].
[18] National Climate Assessment, at 45; Kate Gordon et al., The Risky Business Project, *Risky Business: The Economic Risks of Climate Change in the United States* 20 (2014) [hereinafter "Risky Business"], *available at* http://bit.ly/1GxEdZc.
[19] *Coastal Impacts, Adaptation, and Vulnerabilities: A Technical Imput to the 2013 National Climate Assessment* (Virginia Burkett & Margaret Davidson eds. 2012) ("Ice makes northern regions particularly susceptible to temperature change; for example, an increase of two degrees Celcius could take a system from frozen to unfrozen

Many sources provide current and credible data regarding sea level rise, sea ice loss, and their potential consequences generally and in Alaska in particular. As relevant examples, SCCCL directs the Commission'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://bit.ly/1umDnCQ.[20]

- The National Climate Assessment, at 44–45, 396–417, 514–36 *available at* http://nca2014.globalchange.gov.[21]

- Climate Central, Surging Seas: Sea Level Rise Analysis, *available at* http://sealevel.climatecentral.org.

- Risky Business: The Economic Risks of Climate Change in the United States, *available at* http://bit.ly/1GE6sVN.

**2. Thawing IRP or Thermokarst**

Thawing IRP or thermokarst is a well-known scourge of Alaskan infrastructure,[22] and one that promises to become increasingly ubiquitous amid Alaska's supernormal warming trend.[23] Most obviously, the capacity of IRP to bear load is compromised by thawing temperatures, such as now occur across Alaska.[24] One recent analysis estimates that IRP bearing capacity in the North Slope of Alaska has fallen by 22% since 1980 and that, by 2040, it will have fallen by 50%.[25] In sum, thawing, re-freezing, heaves, and other engineering challenges that promise to become more extreme amid climate change are highly disruptive to infrastructure,[26]

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with extensive implications. This is not the case for coastal regimes anywhere else in the U.S. and represents a major additional stressor in addition to sea-level rise, waves, and storm surge.").

[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., 2013).

[21] F.S. Chapin et al., *Ch. 22: Alaska*, in Climate Change Impacts in the United States: The Third National Climate Assessment 514–36 (J. M. Melillo et al., eds., U.S. Global Change Research Program, 2014).

[22] Martha K. Raynolds et al., *Cumulative Geoecological Effects of 62 Years of Infrastructure and Climate Change in Ice-Rich Permafrost Landscapes, Prudhoe Bay Oilfield, Alaska*, 20 Global Change Biology 1211 (2014); *see also* Oscar J. Ferrians, Jr. et al., Permafrost and Related Engineering Problems in Alaska, Geological Survey Professional Paper 678 (1969), http://on.doi.gov/1PQgYeF.

[23] Raynolds et al., *supra* note 22; Chapin et al., *supra* note 21, at 516–17; *see also*. Eunkyoung Hong et al., *Thaw Settlement Hazard of Permafrost Related to Climate Warming in Alaska*, 67 Arctic 93 (Mar. 2014) ("Results indicate increased thaw subsidence risk in northern Alaska in 2050, with the greatest increase expected in parts of northwest Alaska.").

[24] Dmitry A. Streletskiy et al., *Permafrost, Infrastructure, and Climate Change: A GIS-Based Landscape Approach to Geotechnical Modeling*, 44 Arctic, Antarctic, & Alpine Research 368, 375 (2012).

[25] *Id.*

[26] *See* P.H. Larsen et al, *Estimating future costs for Alaska public infrastructure at risk from climate change*, 18 Global Environmental Change 442 (2008).

including pipelines,[27] and those pipelines in turn can have significant impacts on the environment if compromised.

### 3. Upstream and Downstream Impacts

Extracting natural gas from wells in the North Slope, processing it for transport across Alaska, cooling it for loading into tankers, transporting it in those tankers, and, of course, combustion by end-users, are all activities that (a) will occur as a result of the Project, (b) would not occur but for the Project, and (c) will occur to an extent that is foreseeable and readily calculable. Furthermore, each of these component activities has predictable environmental impacts.[28] The circumstances of the Project make it unlike others licensed by FERC that have involved a node or link in a network of substantially extant natural gas infrastructure.[29] As such, FERC cannot claim that the projects' indirect impacts, both upstream and downstream, are somehow not foreseeable. Instead, FERC must recognize that, because the origins of the gas to be extracted and transported are already known, and the nature of that extraction and transport well understood, the indirect effects of those activities can reasonably be anticipated—and therefore must be reflected in an EIS.

* * *

To adequately protect the Alaska LNG Project and its surrounding environment from future climate change impacts, the Commission should consider the risks arising from sea level rise, sea warming, ice loss, and thawing IRP. Consideration of such risks by a federal agency would not be a novel undertaking,[30] and is especially exigent here given that the Project will support the compression and transport of combustible and potentially explosive gas.

Specifically, the Commission should assess the projected range of sea level rise and related potential for storm surge and coastal erosion throughout the planned life of the Alaska LNG Project, and should identify ways to respond effectively. Similarly, the Commission should

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[27] Frederick E. Nelson, Lawson W. Brigham et al., U.S. Arctic Research Commission, Permafrost Task Force Report: Climate Change, Permafrost, and Impacts on Civil Infrastructure 25–34 (Dec. 2003) (discussing various impacts, including effects on Trans-Alaska Pipeline's supporting structure).

[28] *See, e.g.*, Timothy Vinciquerra et al., *Regional air quality impacts of hydraulic fracturing and shale natural gas activity: Evidence from ambient VOC observations*, 110 Atmospheric Env't 144 (2015) (identifying natural gas hydrofracture drilling operations as sole plausible cause for increase in ambient emissions of ethane and VOCs—and, by inference, methane—in region downwind of drilling operations in Pennsylvania and West Virginia); Victor M. Heilweil et al., *Stream Measurements Locate Thermogenic Methane Fluxes in Groundwater Discharge in an Area of Shale-Gas Development*, 49 Envtl. Sci. & Tech. 4057 (2015) (measuring migration of fingerprinted methane, i.e., gas not attributable to sources other than drilling, into waters near shale-gas development operations); Christopher W. Moore et al., *Air Impacts of Increased Natural Gas Acquisition, Processing, and Use: A Critical Review*, 48 Envtl. Sci. & Tech. 8349 (2014) (discussing several case study-based natural gas lifecycle emissions assessments); National Research Council, Cumulative environmental effects of oil and gas activities on Alaska's North Slope (2003).

[29] *Compare* FERC, Environmental Assessment for the Cove Point Liquefaction Project, Dominion Cove Point LNG, LP Docket No. CP13-113-000, at 163 (May 2014), http://bit.ly/1k5fNM0 ("A more specific analysis of Marcellus Shale upstream facilities is outside the scope of this analysis because the exact location, scale, and timing of future facilities are unknown.").

[30] *See, e.g.*, Department of Interior, Seward Peninsula - Nulato Hills - Kotzebue Lowlands Rapid Ecological Assessment, Final Report II-3-c (Oct. 2012), http://bit.ly/207u2Rk.

assess projected changes to IRP in the vicinity of the Project and identify engineering solutions capable of responding to the host of risks that thermokarst poses to sensitive infrastructure.

In its projections of the future state of coastal waters and Alaska's IRP, the Commission should take note of Alaska's aberrant rate of warming relative to other regions of the U.S. and the world.[31] In the same vein, the Commission should consider not only that warming in Alaska seems to be happening faster, but that it gives rise to effects that, in combination, can be especially disruptive to coastal or inland facilities. Put another way, the baseline of the Project's future environmental circumstances should reflect that Alaska appears to be highly sensitive to climate change and to be on a more extreme climate change trend line.

Thank you for the opportunity to submit comments on the Alaska LNG Project. Please feel free to contact SCCCL with any questions.

Sincerely,

Justin M. Gundlach, Esq.
Climate Law Fellow
Sabin Center for Climate Change Law
212-854-0106
justin.gundlach@law.columbia.edu

enclosures:

- FERC's 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)
- 2014 CEQ Draft Guidance

[31] EPA, Climate Change: Climate Impacts in Alaska, http://1.usa.gov/1OpgPzF (last visited Nov. 4, 2015) ("average temperature across Alaska . . . . more than twice the warming seen in the rest of the United States").