Department of Energy
Technical Support Document
Notice of Proposed Rulemaking
National Environmental Policy Act Implementing Procedures
(10 CFR Part 1021)
May 2020

This Technical Support Document supplements the Department of Energy's (DOE's) Notice of Proposed Rulemaking to update its National Environmental Policy Act (NEPA) regulations (10 CFR 1021) regarding authorizations under section 3 of the Natural Gas Act (15 U.S.C. 717). See 85 FR 25340, May 1, 2020, at https://www.regulations.gov/docket?D=DOE-HQ-2020-0017.

In this Technical Support Document, DOE provides information that supplements the preamble discussion of the proposed changes and provides links to reference documents. For assistance in accessing referenced documents, contact Yardena Mansoor, Office of NEPA Policy and Compliance, at *DOE-NEPA-Rulemaking@hq.doe.gov* or 800-472-2756.

Technical Studies

LNG Information Paper #3, LNG Ships, 2019 Update (GIIGNL - The International Group of Liquefied Natural Gas Importers): https://giignl.org/sites/default/files/PUBLIC_AREA/About_LNG/4_LNG_Basics/giignl2019_infopapers3.pdf

This paper describes the transport of liquefied natural gas (LNG) in large ships known as LNG carriers. This paper also summarizes the international security measures established by the International Maritime Organisation (IMO).

- (Page 1) "Since the first cargoes of LNG were shipped on a regular commercial basis in 1964, almost 100,000 shipments have been made without a single incident of LNG being lost through a breach or failure of the ship's tanks."
- (Page 3) "LNG ships must comply with all relevant local and international regulatory requirements including those of the International Maritime Organisation (IMO), International Gas Carriers Code (IGC) and US Coast Guard (USCG).

  All LNG ships have double hulls. The cargo is normally carried near atmospheric pressure in specially insulated tanks, referred to as the cargo containment system inside the inner hull, although some smaller carriers and bunker barges have tanks capable of operating at pressures of up to 10 barg. International codes govern the design and construction of gas carriers. There are additional international requirements set out in the codes which vary with the type of cargo that the ship will carry." [Barg is a unit of pressure.]

- (Page 6) "LNG tankers have sailed over 92,000 voyages without major accident or loss of cargo."

Liquefied Natural Gas (LNG) Import Terminals: Siting, Safety, and Regulation (Congressional Research Service Report, 2009): https://www.everycrsreport.com/files/20091214_RL32205_e95cb50c88dbd56a2c8f706b2d521ef7ae81ee00.pdf

Among the Report's findings:

- (Page 6) "The LNG tanker industry claims a record of relative safety over the last 50 years; since international LNG shipping began in 1959 [as reported in 2009], tankers have carried over 45,000 LNG cargoes and traveled over 128 million miles without a serious accident at sea or in port. LNG tankers have experienced groundings and collisions during this period, but none has resulted in a major spill. The LNG marine safety record is partly due to the double-hulled design of LNG tankers." [Footnotes omitted.]
- (Page 6) "LNG tankers also carry radar, global positioning systems, automatic distress systems and beacons to signal if they are in trouble. Cargo safety systems include instruments that can shut operations if they deviate from normal as well as gas and fire detection systems." [Footnote omitted.]
- (Page 15) "The US Coast Guard (USCG) has authority to review, approve, and verify plans for marine traffic around proposed onshore LNG marine terminals as part of the overall siting approval process led by FERC [Federal Energy Regulatory Commission]. The USCG is responsible for issuing a Letter of Recommendation regarding the suitability of waterways for LNG vessels serving proposed terminals. The agency is also responsible for ensuring that full consideration is given in siting application reviews to the safety and security of the port, the LNG terminal, and the vessels transporting LNG. The USCG acts as a cooperating agency in the evaluation of LNG terminal siting applications."

Transportation Study: Impacts Associated with New and Emerging Natural Gas Liquefaction Facilities, Phase 1 Whitepaper (U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Office of Hazardous Materials Safety, 2016): https://rosap.ntl.bts.gov/view/dot/36455

Among the Report's findings:

- (Page 13) "As LNG ships are double-hulled, with more than six feet of void space or water ballast between the outer and inner hulls and the cargo tanks, the double hulls help to prevent leakage or rupture in the event of an accident. LNG ships are also equipped with sophisticated leak detection technology, ESD [emergency shutdown] systems, advanced radar and positioning systems, and numerous other technologies designed to ensure the safe and secure transport of LNG."
- (Page 13) "Studies undertaken by various technical authorities and Sandia National Laboratories on LNG shipping safety and security confirm that risks from accidental LNG spills, including as a result of collisions and groundings, are highly unlikely due to the rigorous safety policies and practices put in place by the LNG industry. Risks resulting from intentional events, such as terrorist acts, can be greatly reduced with appropriate security, planning, mitigation, and prevention, and the LNG carrier industry has these precautions in place." [Footnotes omitted.]

- (Page 14) "The LNG industry carefully follows requirements set forth by the IMO, FERC, U.S. DOT [U.S. Department of Transportation], and USCG, and works closely with the U.S. Department of Homeland Security (DHS) to ensure that its operations are safe and secure."

NEPA Reviews

Rio Grande LNG Project EIS (Federal Energy Regulatory Commission, 2019), adopted as DOE/EIS-0519: https://www.energy.gov/nepa/downloads/doeeis-0519-final-environmental-impact-statement

Federal Energy Regulatory Commission (FERC) EISs for an LNG terminal summarize the safety record of LNG transportation and safety requirements in U.S. and international waters. For example, in this recent EIS, section 4.12.1.3, Coast Guard Safety Regulatory Requirements and Letter of Recommendation, provides relevant information:

- LNG Marine Vessel Historical Record (Page 4-309) "Since 1959, ships have transported LNG without a major release of cargo or a major accident involving an LNG marine vessel. There are more than 370 LNG marine vessels in operation routinely transporting LNG between more than 100 import/export terminals currently in operation worldwide. Since U.S. LNG terminals first began operating under FERC jurisdiction in the 1970s, there have been thousands of individual LNG marine vessel arrivals at terminals in the U.S. For more than 40 years, LNG shipping operations have been safely conducted in U.S. ports and waterways.

  A review of the history of LNG maritime transportation indicates that there has not been a serious accident at sea or in a port which resulted in a spill due to rupturing of the cargo tanks. However, insurance records, industry sources, and public websites identify a number of incidents involving LNG marine vessels, including minor collisions with other marine vessels of all sizes, groundings, minor LNG releases during cargo unloading operations, and mechanical/equipment failures typical of large vessels."
- LNG Marine Vessel Safety Regulatory Oversight (Page 4-311) "The Coast Guard exercises regulatory authority over LNG marine vessels under 46 CFR 154, which contains the United States safety standards for self-propelled LNG marine vessels transporting bulk liquefied gases. The LNG marine vessels visiting the proposed facility would also be constructed and operated in accordance with the IMO *Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk* and the *International Convention for the Safety of Life at Sea*. All LNG marine vessels entering U.S. waters are required to possess a valid IMO Certificate of Fitness and either a Coast Guard Certificate of Inspection for U.S. flag vessels or a Coast Guard Certificate of Compliance for foreign flag vessels. These documents certify that the LNG marine vessel is designed and operating in accordance with both international standards and the U.S. regulations for bulk LNG marine vessels under 46 CFR 154.

  The LNG marine vessels which would deliver or receive LNG to or from the proposed Project would also need to comply with various U.S. and international security requirements. The IMO adopted the *International Ship and Port Facility Security Code* in 2002. This code requires both ships and ports to conduct vulnerability assessments and to develop security plans. The purpose of the code is to prevent and suppress terrorism against ships; improve security aboard ships and ashore; and reduce the risk to passengers, crew, and port personnel on-board ships and in port areas."