

EPA's Liquefied Natural Gas Regulatory Roadmap



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On the Cover

EPA thanks the Center for Liquefied Natural Gas for use of the photos of a natural gas tanker and ariel shot of an import facility.

About this Roadmap

Natural gas continues to play an important role in meeting our nation's growing energy needs. In 2005, natural gas accounted for 23% of our nation's total energy consumption.¹ The Department of Energy's Energy Information Administration (EIA) projects that domestic consumption of natural gas will continue to increase and that imports of liquefied natural gas (LNG) will meet much of the increased demand.²

LNG, created when natural gas is converted into a liquid state by cooling it to a temperature close to negative 260°F, presents an efficient way to transport natural gas via ship from foreign production areas to the United States. The cooling process reduces the volume of natural gas by a factor of more than 600, enabling one ship to transport close to five percent of the nation's average daily demand for natural gas (or enough energy to heat more than 43,000 homes per year).³ Once LNG arrives at an import facility, the LNG is typically stored at atmospheric pressure in insulated tanks before it is converted back into a gaseous state for shipment via pipeline or, in some instances, transported via truck to market. Anticipating the use of this type of technology, EIA projects that total capacity of U.S. LNG import facilities will rise from 1.4 trillion cubic feet in 2004 to 4.9 trillion cubic feet in 2015.⁴



Courtesy of DOE Energy Information Administration

¹ U.S. Department of Energy, Energy Information Administration, *Monthly Energy Review* www.eia.doe.gov/mer/contents.html

² U.S. Department of Energy, Energy Information Administration, *Annual Energy Outlook 2006* www.eia.doe.gov/oiaf/aeo/index.html

³ U.S. Department of Energy, *Liquefied Natural Gas: Understanding the Basics*, August 2005 www.fe.doe.gov/programs/oilgas/publications/lng/LNG_primerupd.pdf

⁴ U.S. Department of Energy, Energy Information Administration, *Annual Energy Outlook 2006*.

Along with many other federal agencies, the U.S. Environmental Protection Agency (EPA) plays an important role in the approval and permitting of LNG import projects (or LNG projects), whether the approval is for the development of a new project or the expansion of an existing project. EPA's *LNG Regulatory Roadmap* catalogs the numerous points at which EPA's statutory and regulatory duties require the Agency to participate in the LNG project approval and permitting process. The *Roadmap* is designed to serve not only as an aid to the regulated community, but also to assist the Agency in meeting its regulatory responsibilities in a timely and effective manner.

Because LNG import projects can be quite different in terms of their physical siting and operational design, and the applicable law also varies, EPA's role varies on a project-by-project basis. The *Roadmap* acknowledges these permutations and focuses on the following key areas of Agency involvement:

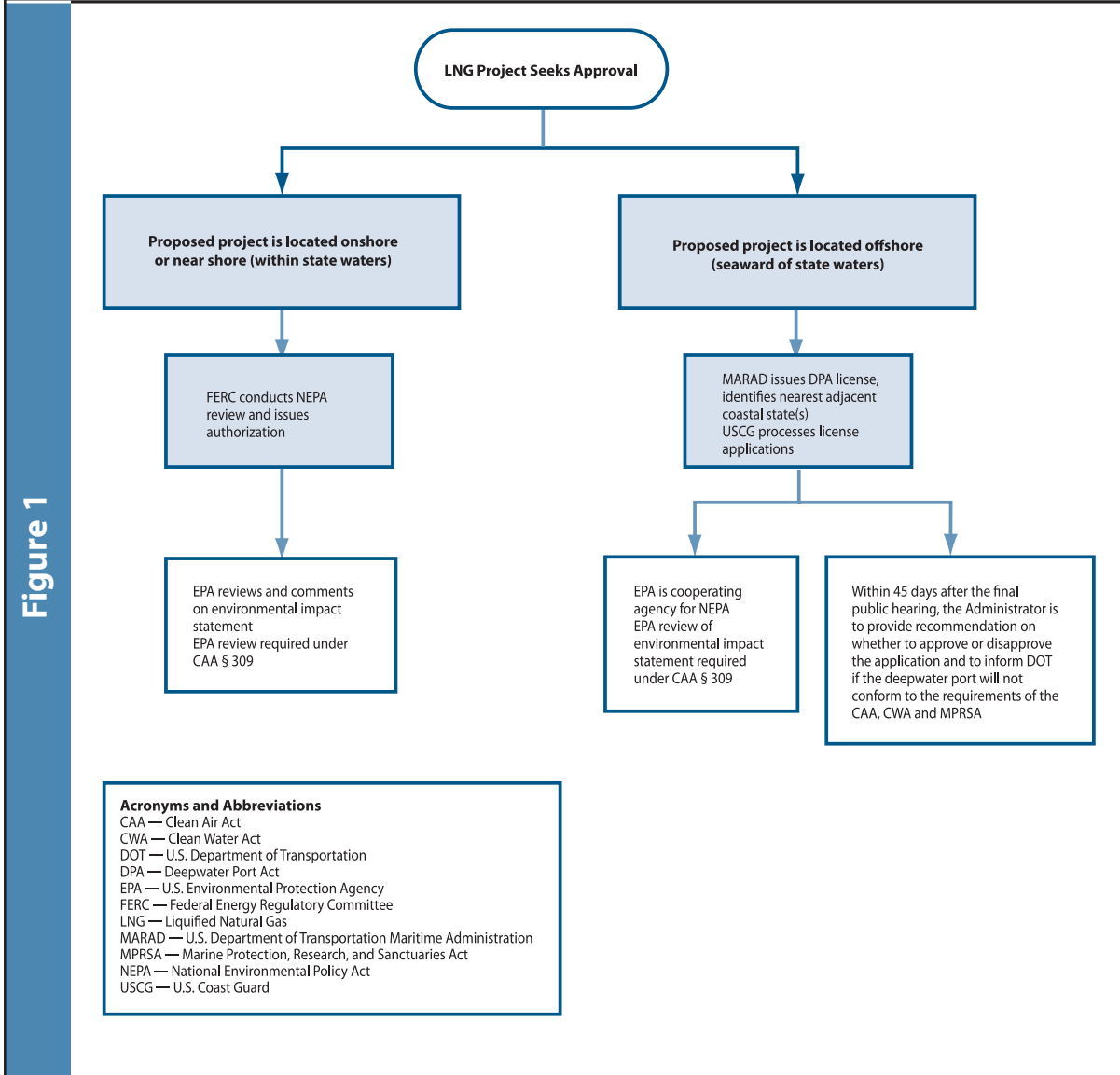
- 1. The LNG project approval and environmental review process;**
- 2. Requirements and decision making related to air emissions;**
- 3. Requirements related to water quality; and**
- 4. Other permitting requirements and considerations.**

The *Roadmap* presents discussions of EPA requirements that may apply to offshore projects (i.e., located beyond state seaward boundaries), as well as onshore and near shore projects (i.e., located within state waters).

Figure 1 (see next page) provides an overview of EPA's role in the environmental review process. Figure 2 (see following page) illustrates EPA's role in the permitting process and other considerations.

The *Technical Appendix* provides a detailed description of the various requirements discussed in the *Roadmap*. To the extent possible, the *Technical Appendix* attempts to distinguish how permitting and approval requirements may vary based upon design characteristics (e.g., the technology used to re-gasify LNG) and the location of associated activities such as pipeline construction.

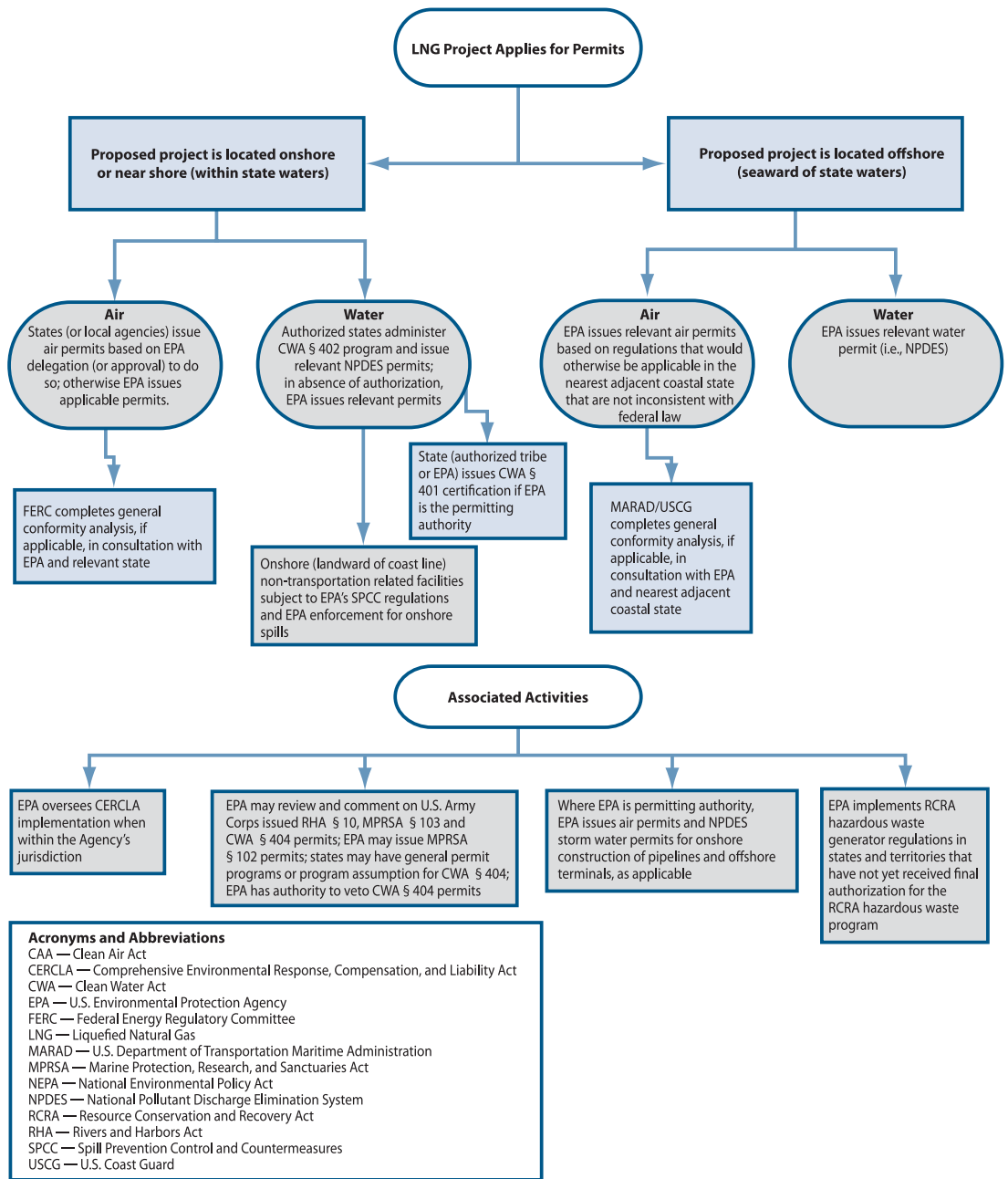
EPA's Role in the LNG Project Approval and Environmental Review Process



The *Roadmap* and the *Technical Appendix* are only intended to provide a general sense of and guidance on the types of information and permit applications that EPA may request from applicants looking to propose or expand an LNG project. The statutory and regulatory provisions described in the *Roadmap* are legally binding. EPA's policies do not carry such legal weight and are not legally enforceable as indicated by the use of non-mandatory language, such as, "may," "should," and "can." The *Roadmap* is not intended to replace the need of the regulated community to consult the appropriate statutes and regulations.

Figure 2

EPA's Role in the LNG Project Permitting Process



Because individual permit and approval requirements are determined on a project-by-project basis, project operators are *strongly* encouraged to engage EPA Regional and Headquarters staff early in the development of their project.

LNG Project Approval and Environmental Review Process

Projects Proposed Offshore in Federal Waters

The Deepwater Port Act⁵ established an expedited license process for authorizing the ownership, construction and operation of deepwater ports in United States' waters located beyond state seaward boundaries. The U.S. Coast Guard (USCG) administers the licensing processes, though substantive decision making is delegated to the Maritime Administration (MARAD), which issues the actual deepwater port license.

EPA involvement in the licensing and environmental review process for LNG projects proposed offshore in federal waters generally occurs at the following points:

- USCG regulations require LNG project operators to include applications for other applicable federal permits when they submit their deepwater port license application. This requirement includes relevant EPA permits;⁶
- USCG/MARAD forward deepwater port license applications to the appropriate EPA Regional Office for consideration under laws administered by EPA including the Clean Air Act (CAA), the Clean Water Act (CWA) and the Marine Protection, Research, and Sanctuaries Act (MPRSA). EPA Regional staff have at least five working days to review the application and determine if the application is complete in relation to these federal environmental statutes. If EPA determines that the application is not complete for its purposes, USCG/MARAD suspends the review period until the applicant supplies missing information;
- Within 45 days after the last public hearing on the license application, the EPA Administrator is to provide the Secretary of Transportation a recommendation on



Courtesy of the Center for Liquefied Natural Gas

⁵ 33 U.S.C. § § 1501-1524.

⁶ 33 C.F.R. 148.105(z) & (bb); 33 U.S.C. § 1518(a)(1).

whether to approve or disapprove the application and to inform the Secretary if the deepwater port will not conform with all applicable provisions of the CAA, CWA, or the MPRSA;⁷

- EPA reviews any prepared Environmental Impact Statement as a cooperating agency and pursuant to the Agency's responsibilities under Section 309 of the CAA; and
- EPA is a cooperating agency for Deepwater Port Act LNG projects and must use the USCG/MARAD NEPA document to support any EPA permitting action that is subject to NEPA (i.e., NPDES permitting).⁸

Onshore Projects and Projects Proposed in State Waters

Under the Natural Gas Act,⁹ the Federal Energy Regulatory Commission (FERC) has jurisdiction over the siting, construction and operation of facilities used to transport natural gas in interstate commerce and of facilities used for the export or import of natural gas. This includes LNG projects onshore and in state waters.¹⁰



Courtesy of DOE Energy Information Administration

EPA involvement in the approval process for LNG projects proposed both onshore and near shore in state waters generally occurs at the following points:

- LNG Project applicants must comply with FERC's pre-filing procedures. This pre-filing process involves agencies working together to develop a single NEPA document to address each agency's requirements;¹¹
- FERC regulations require applicants to consult with the appropriate federal and state agencies during the planning stages of a proposed project to ensure that all potential environmental impacts are identified, and to submit applications for all federal and state approvals as early as possible in the planning process. This includes applicable EPA issued or approved permits;¹²
- EPA may serve as a cooperating agency to assist FERC in the preparation of an Environmental Assessment or Environmental Impact Statement; and
- When FERC prepares an Environmental Impact Statement, EPA reviews and comments on the document as part of EPA's responsibility under section 309 of the Clean Air Act.

⁷ 33 U.S.C. § 1504(e)(2) and 33 U.S.C. § 1503(c)(6).

⁸ 33 U.S.C. § 1504(f).

⁹ 15 U.S.C. § 717 *et seq.*

¹⁰ 15 U.S.C. § 717a(11)(definition of "LNG terminal").

¹¹ 15 U.S.C. §717(n)-1(a) & 18 C.F.R. 157.21(a).

¹² 18 C.F.R. 380.3(b)(3)&(4).

Requirements and Decision Making Related to Air Emissions

The Clean Air Act has requirements for emission limitation and reduction and generally implements these requirements through permits. To determine the specific requirements and permits that apply for new LNG projects, the following must be evaluated:

- The project design (e.g., the equipment, fuels, or pollutant-containing materials to be used at the project);
- The applicable regulations of the nearest adjacent coastal state given the location of the project, as well as the location of any associated construction activities; and
- What emissions are part of the stationary source (e.g., whether certain vessel-based emissions are included) and the size of emissions (e.g., whether the project is a major source for certain pollutants).

Sources of air emissions from new LNG projects may include, depending on the project design and applicable law:

- Construction activities;
- Operation of stationary equipment once the project is built; and
- Vessels associated with operation of the project.



Permitting requirements vary on a project-by-project basis. For this reason, not all LNG projects apply for the same permits or are subject to the same requirements. In some instances, LNG projects may need to apply for the following permits and consider the following types of requirements:

- **New Source Review Permitting (Prevention of Significant Deterioration, nonattainment New Source Review, and minor source New Source Review);**
- **Title V Operating Permits;**
- **New Source Performance Standards;**
- **Hazardous Air Pollutant Standards; and**
- **Other state air regulations (i.e., odor, emergency episode plans).**

Projects Offshore in Federal Waters

If the LNG project is located offshore, seaward of state waters, **EPA:**

- Issues air permits based on the Clean Air Act and the air regulations that would otherwise be applicable in the nearest adjacent coastal state, as long as the state or local requirements are applicable and not inconsistent with federal law and the Deepwater Port Act. (Related onshore construction activities may be permitted by the state or local control agency, if authorized);
 - Depending on the source and its location, EPA may need to identify technology standards, emissions offsets and complete ambient air quality analyses.
- Consults on the MARAD/USCG general conformity analysis, if applicable.

Onshore Projects and Projects in State Waters

For onshore LNG projects, **EPA:**

- Issues air permits only in cases where EPA has not delegated such authority to the state or local control agency or approved their permit program into the State Implementation Plan. This may include any air permits that might be needed during the construction of associated pipelines; and
- Consults on the FERC general conformity analysis, if applicable.

Requirements Related to Water Quality

During the approval and permitting process for LNG projects that propose to discharge pollutants into United States' waters, EPA or the authorized state, tribe or U.S. territory implements applicable Clean Water Act sections that vary depending on where the discharge occurs. EPA also evaluates whether and how the Marine Protection, Research, and Sanctuaries Act applies to a project's activities. EPA's regulatory and oversight actions for LNG projects vary based upon the location and design of an individual LNG project, as well as associated construction and operational activities.



Courtesy of DOE Energy Information Administration

Permitting requirements vary on a project-by-project basis. For this reason, not all LNG projects apply for the same permits or are subject to the same requirements. In some instances, LNG facilities may need to comply with the following types of requirements:

- **National Pollutant Discharge Elimination System Program (NPDES) permitting, which may include:**
 - **Effluent limitations for discharged pollutants, both for process wastewater and for storm water associated with industrial activity, based on:**
 - **Technology-based standards that vary according to pollutant**
 - **Applicable water quality standards, including state water quality certification**
 - **Ocean discharge criteria**
 - **Cooling water intake requirements;**
- **Requirements that apply to the disposition of dredged or fill material; and**
- **Oil spill prevention.**

Projects Offshore in Federal Waters

For projects located offshore in federal waters, **EPA:**

- Serves as the NPDES permitting authority for discharges of pollutants from a point source into waters of the United States and identifies technology-based and water quality-based limits and conditions based on best professional judgment;
- Issues NPDES storm water discharge permits for discharges associated with industrial activity where industrial activity and materials are not sheltered to prevent exposure to storm water; and
- Evaluates the potential effects of discharge on the marine environment during NPDES permit review under the provisions of Clean Water Act section 403.

Onshore Projects and Projects in State Waters

For onshore and near shore projects, **EPA**:

- Serves as the NPDES permitting authority only if a state, tribe or U.S. territory is not authorized to do so. In such instances, EPA develops permit conditions for near shore projects based on best professional judgment;
- Issues NPDES permits for storm water discharges associated with industrial activity, including construction activity, under either a general permit or an individual NPDES permit (when EPA is the NPDES permitting authority);
- Maintains a regulatory and enforcement role for oil spill prevention activities under Clean Water Act section 311 for onshore and near shore non-transportation related facilities landward of the coastline. EPA generally has primary enforcement authority for inland oil spills; and
- Issues a Clean Water Act section 401 certification if the relevant state or tribe does not have authority to do so.

Projects that Involve Dredging and Dumping of Materials in Water

EPA maintains an oversight role in the regulation of certain dredging activities and dumping of materials in ocean waters. However, the Agency's involvement varies based upon the type and location of the activity. **EPA** generally will become involved in the following instances:

- The U.S. Army Corps of Engineers (Corps) issues a Marine Protection, Research, and Sanctuaries Act section 103 permit for the disposal of dredged material into the territorial sea using EPA's environmental criteria and subject to EPA's concurrence;
- The Corps issues a Clean Water Act section 404 permit for the discharge of dredged material into waters of the United States that lie inland from the baseline. The discharge of dredged material into the territorial sea for the primary purpose of fill is also evaluated in accordance with Clean Water Act section 404. **EPA** comments on these permits and can elevate concerns through a formal dispute resolution process and has the authority to veto section 404 permits;
- **EPA** may issue permits for the dumping of materials (other than dredged materials) seaward of the territorial seas (3 nautical miles) pursuant to section 102 of the Marine Protection, Research, and Sanctuaries Act; and/or
- The Corps issues a permit under section 10 of the Rivers and Harbors Act to regulate activities that affect navigation in all domestic waters. **EPA** comments on these permits as part of the public interest review process and can elevate specific concerns through a formal dispute resolution process.

Other Permitting Requirements and Considerations

Hazardous Waste Generation

Operators may be subject to federal hazardous waste generator regulations. In some cases, EPA may serve as the permitting authority under the Resource Conservation and Recovery Act.

Emergency Response

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) better known as the “Superfund Act,” addresses cleanup of hazardous substances. CERCLA and its implementation documents empower EPA and other agencies to identify and prioritize sites for cleanup, and to order or carry out environmental remediation.

Environmental Justice

Parties intending to operate LNG projects may wish to consider whether or not their proposed actions present environmental justice issues before they submit their permit applications to EPA.

LNG Regulatory Roadmap

Technical Appendix

Overview

The *Technical Appendix* is divided into several sections that outline areas where EPA engages in permitting and approval processes for proposed LNG projects. First, the *Technical Appendix* provides a more comprehensive overview of EPA's role in the approval and environmental review of LNG projects. The *Technical Appendix* discusses the statutes governing the approval and environmental review of these projects, specifically the National Environmental Policy Act (NEPA), as well as the Deepwater Port Act (DPA) and the Natural Gas Act (NGA), which are administered primarily by the Department of Transportation (via the Maritime Administration) and the U.S. Coast Guard and the Federal Energy Regulatory Commission, respectively.

Next, the *Technical Appendix* turns to EPA's role in the implementation of relevant provisions of the Clean Air Act (CAA), the Clean Water Act (CWA) and the Marine Protection, Research, and Sanctuaries Act (MPRSA). Because states implement some provisions of these federal laws, the *Technical Appendix* also describes the role of states under these statutes.

Finally, the *Technical Appendix* discusses other EPA permitting requirements and considerations, including federal hazardous waste generator regulations, hazardous substance release regulations and environmental justice.

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LNG Project Approval and Environmental Review Process

General Overview - The National Environmental Policy Act

The National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. 4321- 4347, establishes the national policy for protection of the environment. Section 102(2)(C) of NEPA requires federal agencies to prepare a “detailed statement” for proposed major actions that significantly affect the quality of the human environment. The statement must include the environmental impacts of the proposed action, alternatives to the proposed action, and any adverse environmental impacts that cannot be avoided should the proposal be implemented. NEPA also provides for public participation in the development of both the scope of review and NEPA documents. 42 U.S.C. § 4332(2)(C).

Under Clean Air Act section 309, EPA reviews and comments on the environmental impacts of various actions of other federal agencies, including all actions subject to the NEPA requirement to prepare an Environmental Impact Statement (EIS). EPA comments in writing and makes its comments available to the public. If EPA determines that the action is unsatisfactory from the standpoint of public health or welfare or environmental quality, EPA refers the matter to the President’s Council on Environmental Quality.

Projects Offshore in Federal Waters

The Deepwater Port Act (DPA), 33 U.S.C. § § 1501 – 1524, established an expedited licensing process for authorizing the ownership, construction, and operation of deepwater ports in United States’ waters located beyond state seaward boundaries. Congress enacted the DPA for several reasons, including:

- Authorizing and regulating “the location, ownership, construction, and operation of deepwater ports beyond the territorial limits of the United States”;
- Promoting “the construction and operation of deepwater ports as a safe and effective means of importing crude oil and natural gas into the United States while minimizing tanker traffic and risks attendant thereto”; and
- Providing “for the protection of the marine and coastal environment to prevent or minimize any adverse impact that might occur as a consequence of the development of such ports.” 33 U.S.C. § 1501(a).

The authority to issue a deepwater port license was given to the Secretary of Transportation.¹³ The DPA defines a “deepwater port” for natural gas to mean “any fixed or floating manmade structure other than a vessel, or any group of such structures, . . . used or intended for use as a port or terminal for the transportation, storage, or further handling of natural gas for transportation to any State, . . . include[ing] all components and equipment, including pipelines, pumping or compressor stations, service platforms, buoys, mooring lines, and similar facilities that are proposed or approved for construction and operation as

¹³ Decision-making authority has been formally delegated to the MARAD Administrator.

part of a deepwater port, to the extent that they are located seaward of the high water mark and do not include interconnecting facilities.” 33 U.S.C. § 1502(9). A deepwater port is deemed to be a “new source” for purposes of the Clean Air Act (CAA) and Clean Water Act (CWA). *Id.*

The DPA established a total timeframe of 356 days from the receipt of a complete license application to complete the deepwater port licensing process, although the “clock” may be suspended due to outstanding information needs. The license application process is administered jointly between MARAD and the U.S. Coast Guard (USCG), with MARAD primarily responsible for project financial reviews and the USCG primarily responsible for project engineering, operations, safety, and environmental reviews, which include compliance with NEPA.¹⁴ EPA permit actions are not subject to the time constraints of the DPA, but should be completed in time to avoid delay of a deepwater port’s construction and operation.

The DPA requires the Secretary of Transportation, in cooperation with other involved Federal agencies and departments, to comply with NEPA as part of the licensing process. 33 U.S.C. § 1504(f). The DPA also states that the Secretary’s NEPA compliance fulfills the requirements of all Federal agencies in carrying out their responsibilities under NEPA. *Id.*

Under the DPA, the Secretary of Transportation also designates “adjacent coastal State[s]”, whose Governor has an opportunity review and approve the license. The DPA defines an adjacent coastal state as “any coastal state which . . . would be directly connected by pipeline to a deepwater port . . . , would be located within 15 miles of any such proposed deepwater port, or that is so designated by the Secretary.” 33 U.S.C. § 1502(1). States also may request designation as an adjacent coastal state. In addition, the DPA declares that the law of the nearest adjacent coastal state, whose seaward boundaries, if extended beyond three miles, would encompass the site of the deepwater port, is the law of the United States and applies to a deepwater port to the extent applicable and not inconsistent with federal law. 33 U.S.C. § 1518(b). There is only one “nearest” adjacent coastal state for a DPA license applicant. EPA’s actions may be affected by the “federalized” law of the nearest adjacent coastal state.

On May 20, 2004, the White House Task Force on Energy Project Streamlining distributed a Memorandum of Understanding (MOU) Related to the Licensing of Deepwater Ports. This MOU was signed by ten participating agencies, with responsibilities related to the licensing of deepwater ports, including EPA. The MOU specifies agency responsibilities and establishes an important coordination mechanism to ensure timely and efficient review of deepwater port licenses.

¹⁴ See the Memorandum of Understanding for inter-agency coordination on licensing of Deepwater Ports www.etf.energy.gov/pdfs/DPA_MOU.pdf. The Secretary of DOT delegated in 49 C.F.R. 146(s) to the USCG authority to process applications for licenses under the DPA.

¹⁵ www.etf.energy.gov/pdfs/DPA_MOU.pdf

The USCG/MARAD has 21 days from receipt of a deepwater port license application to determine whether or not it is complete. 33 U.S.C. § 1504(c)(1). A complete deepwater port license application must contain all applications for federal authorizations that are required for ownership, construction and operation of a deepwater port. 33 U.S.C. 1504(c)(2)(J)&(L) & 33 C.F.R. 148.105. This requirement includes relevant EPA permits. 33 C.F.R. 148.105(z)&(bb) & 33 U.S.C. §1518(a)(1). Once USCG/MARAD receives a DPA license application, it forwards a copy(s) of the application to other responsible federal agencies, including the appropriate EPA Region, for a completeness review. EPA reviews the application for completeness under laws administered by EPA, including the CAA, CWA, and Marine Protection, Research, and Sanctuaries Act (MPRSA). Under the MOU, EPA Regional staff has at least five working days to review the application and determine if it is complete. If the license application is incomplete from EPA's perspective, EPA notifies the USCG/MARAD by letter of the missing information. In such cases, the USCG/MARAD suspends the running of the review period until the applicant supplies the missing information.

Under the DPA, Federal agencies, including EPA, must review DPA license applications and, within 45 days after the last public hearing on the proposed action, provide a recommendation to the Secretary of Transportation to approve or disapprove the application. 33 U.S.C. § 1504(e)(2). A recommendation to disapprove the application must include a description of why the application does not comply with the laws and regulations the agency administers and any conditions or amendments necessary so that the application will comply. *Id.* Similarly, the Secretary cannot issue a DPA license unless the Governor of each adjacent coastal State approves, or is presumed to approve, the license. 33 U.S.C. 1503(c)(8). A Governor must transmit his/her approval or disapproval to the Secretary no later than 45 days after the last public hearing on the license application. 33 U.S.C. § 1508(b)(1). If a governor fails to transmit his/her approval or disapproval within this time frame, approval is conclusively presumed. *Id.* Finally, the Secretary may not issue the license if the EPA Administrator informs the Secretary within 45 days of the last public hearing on the proposed license “that the deepwater port will not conform with all applicable provisions” of the CAA, CWA, or the MPRSA. 33 U.S.C. § 1503(c)(6).

The issuance of an EPA National Pollutant Discharge Elimination system (NPDES) permit pursuant to section 402 of the CWA for a deepwater port requires supporting NEPA documentation because the DPA deems a deepwater port to be a “new source.”¹⁶ Under the DPA the NEPA review conducted by the USCG/MARAD fulfills the NEPA requirements for all Federal agencies, including EPA. 33 U.S.C. § 1504(f). Therefore, EPA is a cooperating agency for DPA projects and uses the USCG/MARAD NEPA document to support its NPDES permit action. The EPA Regional NEPA compliance staff coordinates with USCG/MARAD to ensure that the NEPA document for the project has the necessary information and analysis to support the decision on the NPDES permit. EPA may sign on to the USCG/MARAD Record of Decision (ROD) or Finding of No Significant Impact (FONSI), but more typically

¹⁶ Generally, most EPA actions under the CWA are exempt from NEPA. 33 U.S.C. § 1371(c). EPA actions under the CAA also are exempt from NEPA. 15 U.S.C. § 793(c)(1).

issues its own NEPA ROD or FONSI. EPA also could use the permit as the ROD, providing the permit contains all the information a ROD would contain.

In addition, EPA reviews and comments on EISs prepared by USCG/MARAD under the authority of section 309 of the CAA.

DPA licenses also may be subject to other federal environmental statutes (e.g., Endangered Species Act, Coastal Zone Management Act, Magnuson Stevens Fishery Conservation and Management Act, and National Historic Preservation Act).

Onshore Projects and Projects in State Waters

Under the Natural Gas Act (NGA) 15 U.S.C. § 717 *et seq.*, the Federal Energy Regulatory Commission (FERC) has jurisdiction over the siting, construction and operation of facilities used to transport natural gas in interstate commerce and of facilities used for the export or import of natural gas, which includes LNG projects onshore and in state waters. FERC also has jurisdiction over the pipeline portion of a deepwater port that is located landward of the high water mark and over interconnecting facilities, which are not part of the deepwater port.¹⁷ With respect to approvals of these projects, the Energy Policy Act of 2005 designated FERC as the lead agency for purposes of coordinating all applicable federal authorizations and for the purposes of complying with NEPA. Under this authority, FERC establishes the schedule for all Federal authorizations, sets deadlines, and maintains a complete consolidated record of all administrative decisions made with respect to any federal authorization.¹⁸

LNG project applicants must comply with FERC's pre-filing procedures. 15 U.S.C. §717(b)-1(a) & 18 C.F.R. 157.21(a). This pre-filing process involves agencies working together to develop a single NEPA document to address each agency's requirements.¹⁹ FERC's NEPA regulations require applicants to "[c]onsult with the appropriate Federal, regional, State and local agencies during the planning stages of the proposed action to ensure that all potential environmental impacts are identified" and to "submit applications for all Federal and State approvals as early as possible in the planning process." 18 C.F.R. 380(b)(3)&(4). This would include applicable EPA permits.

Once an application has been filed, FERC prepares either an environmental assessment (EA) or an EIS to fulfill its obligations under NEPA. When appropriate, EPA can serve as a cooperating agency to assist FERC in the preparation of an EA or EIS. When FERC prepares an EIS, EPA reviews and comments on the document as part of EPA's responsibility under section 309 of the CAA.

Unlike deepwater ports, onshore projects are not considered "new sources" under the CWA. Therefore, under CWA section 511(c), the issuance of any required NPDES permit is exempt from NEPA's EIS requirement.

¹⁷ See 33 U.S.C. 150(b)(9)(C).

¹⁸ Energy Policy Act of 2005, Pub. L. No. 109-58 Sec. 313 which amended 15 U.S.C. 717 n.

¹⁹ For more information on the FERC pre-filing process see ferc.gov/help/processes/flow/lng-1.asp

In addition, NGA licenses also may be subject to other federal environmental statutes (e.g., Endangered Species Act, Coastal Zone Management Act, Magnuson Stevens Fishery Conservation and Management Act, and National Historic Preservation Act).

Requirements and Decision Making Related to Air Emissions

This section of the *Technical Appendix* presents an overview of the potentially applicable sections of the Clean Air Act (CAA) and associated EPA regulations. In addition, this section includes a discussion of EPA's role in the air permitting (and oversight of permitting) of offshore, near shore and onshore projects.

General Overview – The Clean Air Act

Important provisions of the CAA include regulation of criteria pollutants and hazardous air pollutants through emission limitations and standards, often including requirements for emission control equipment and the requirement that each state have a state implementation plan (SIP). A SIP contains additional state-specific measures that provide for the attainment and maintenance of the national primary and secondary ambient air quality standards. Additional provisions central to the CAA are requirements that new sources apply for, and obtain, permits to construct before starting construction and that major sources, and certain non-major sources, obtain a title V operating permit. Operators of prospective LNG projects should contact the appropriate air permitting agencies, including their EPA Regional Office and EPA Headquarters, early in the project planning phase in order to discuss air permitting requirements.

CAA permitting requirements vary based on the design of the project and its location. For new LNG projects, factors that come into play include the project design (e.g., process and fuel burning selection; air emissions levels), which could determine whether permits are needed and, if so, what emissions are part of the stationary source (e.g., whether certain vessel-based emissions are included). In addition, some state (or nearest coastal state) requirements may apply to LNG projects located in federal waters and these state requirements may be more stringent than, or in addition to, federal requirements.

Depending on the project design and applicable law, sources of air emissions from new LNG projects may include: construction activities, operation of stationary equipment once the project is built, and vessels associated with operation of the project. An LNG project may emit many different air pollutants, including nitrogen oxides (NO_x), particulate matter (PM), volatile organic compounds (VOC), sulfur dioxide (SO₂), carbon monoxide (CO), and hazardous air pollutants (HAP).

If the LNG project is located offshore, seaward of state waters, the DPA requires that the project receive applicable air permits from EPA. For these deepwater ports, EPA issues the air permits based on the CAA and the air regulations that would otherwise be applicable in the nearest adjacent coastal state, as long as the state or local requirements are applicable

and not inconsistent with federal law and the DPA. However, state or local control agencies (if they have EPA-approved permitting programs) would issue any required air permits for emissions that occur within state boundaries, such as any onshore associated construction activities. These activities may include the construction of offshore projects that are assembled on land or the modification or installation of new pipelines. If complete information is not available by the time MARAD must either approve or deny the application, EPA may request that the license for the deepwater port be conditioned upon the applicant receiving the required Clean Air Act permits from EPA before any construction / operational activity that requires a permit can occur.

For onshore LNG projects, as well as those located in state waters, the states or local air control agencies issue the applicable CAA permits (unless EPA has not delegated or otherwise approved a state program for them, in which case EPA will issue the permits). The suite of required permits will vary, depending on the design of the project, the air quality status of the area, and the amounts of different air pollutants to be emitted. States and local control agencies with authority for issuing federally-required construction and operating permits would also be responsible for issuing any air permits that might be needed to authorize construction and operation of associated pipelines in areas of state jurisdiction.

New Source Review (NSR) Permitting Overview

The CAA requires each state to have an EPA-approved SIP for the attainment and maintenance of the national primary and secondary ambient air quality standards.²⁰ Section 110 of the Act requires that each SIP include a program to regulate the construction and modification of any stationary source within the area covered by the plan as necessary to ensure that the National Ambient Air Quality Standards (NAAQS) are achieved and maintained. Pursuant to this requirement, the owners or operators of stationary sources of air pollution, including new LNG projects, (and associated pipelines) must generally obtain air permits before commencing construction.²¹

This air permitting process is called New Source Review (NSR). The overall NSR program is divided into three separate permitting programs – Prevention of Significant Deterioration (PSD), nonattainment NSR, and minor source NSR – depending on the proposed quantity of air emissions and location of the source. The PSD program applies to new “major sources” and “major modifications” at existing major sources for pollutants where the area is in attainment with or unclassifiable with respect to the NAAQS. Nonattainment NSR applies to new “major sources” or “major modifications” at existing major sources for pollutants where the area is not in attainment with the NAAQS. Minor NSR requirements apply to nonmajor stationary sources (and, in some cases, to major sources) and vary from state to state. An existing minor source will trigger NSR if it undertakes a modification that in itself exceeds the major source threshold or if the source requests a relaxation of a limit that was set to ensure that the source would not trigger NSR. 40 C.F.R. 52.21(r)(4).

²⁰ CAA § 110(a).

²¹ See CAA §§ 110(a)(2)(C), 165, and 172(c)(5).

The construction permitting programs for “major” sources are the PSD program (Title I, Part C of the CAA) and the nonattainment NSR program (Title I, Part D of the CAA). For each criteria pollutant (i.e., ozone, SO₂, PM, lead, NO₂, and CO), the applicable permitting program is determined by the air quality designation of the area in which the source is located. Because air quality designations are made on a pollutant-specific basis, a source may simultaneously be in an attainment area for one or more pollutants and in a nonattainment area for other pollutants. Each program has different requirements and different thresholds (in terms of a facility’s annual emissions) at which they become applicable. The major source threshold is the emission rate at which the program becomes applicable to the source. Major source thresholds for the PSD program vary depending on the type of the source. The major source threshold for the federal nonattainment NSR program may also vary depending on the pollutant and severity of nonattainment in a given area. State PSD and nonattainment NSR programs approved into the SIP may contain lower major source emission thresholds.

In general, new LNG projects are subject to PSD if they propose to exceed the major source threshold for any PSD regulated air pollutant. If PSD applies, then LNG projects must: install the best available control technology (BACT) to reduce air emissions; model compliance with air quality standards and PSD increments; evaluate impacts on Class I areas (e.g., certain designated parks or wilderness areas); and address impacts on soils, vegetation, and visibility.²² Proposed permits are subject to public notice and comment as well as opportunity for public hearing.

If nonattainment NSR applies and the new LNG project will be a “major” source, the project must emit the nonattainment pollutant (or precursors) at or below the “lowest achievable emissions rate” (LAER), as well as “offset” these proposed emissions with actual reductions in existing emissions (e.g., by installing emission controls on existing air emission sources).²³ Like PSD permits, proposed nonattainment NSR permits are subject to public notice and comment as well as opportunity for public hearing.

A “minor” construction permit is needed if the proposed LNG project has the potential to emit air pollutants in amounts below “major” source thresholds. Minor NSR permit requirements vary by state but generally prevent the construction of sources that would interfere with attainment or maintenance of the NAAQS or violate a control strategy. States are able to customize the requirements of their minor NSR programs as long as they meet certain minimum requirements. Minor source requirements of some states include: requirements that minor sources install BACT, limitations on sulfur content in fuels, and emission limits based on process throughput.

Title V Operating Permits

Title V of the CAA requires “major sources” under any definition of the CAA to obtain an operating permit. As with the NSR permitting program, the term “major source” is defined differently for different criteria pollutants and varies according to the air quality classification of the area where it is located. A major source for NSR purposes will also be a major source

²² 40 C.F.R. 52.21; see also 40 C.F.R. 51.166 (requirements for state PSD programs).

²³ CAA § 173.

for Title V purposes. In addition, sources that are minor NSR sources may still be subject to the Title V permitting requirements. While it is possible that an LNG project will not be subject to Title V permitting requirements, to date all proposed LNG facilities have been or will be subject to the Title V permitting requirements.

A new LNG project that is required to get a title V permit will be issued either a state operating permit pursuant to part 70 or a federal operating permit pursuant to part 71 and Title V.²⁴ A part 70 operating permit program is implemented by a state, local, tribal, or territorial air permitting control authority, based on state-adopted regulations that EPA approves as meeting the requirements of its part 70 rules. A part 71 operating permit program is implemented by EPA or a delegated agency, based on the federal part 71 rules, where a part 70 program is not in place (because one was never approved or one was approved but EPA found it to be deficient), or because the source is located on the Outer Continental Shelf (OCS) or in Indian country, where state or local agencies do not have jurisdiction. In addition, the federal government is the permitting authority under the DPA and issues a federal operating permit pursuant to Title V, but the federal government applies the laws of the nearest adjacent coastal state to determine which clean air requirements are applicable to the source.

A new LNG project will generally have up to one year from commencing operation before it is required to submit a complete Title V operating permit application (applicants should contact their EPA Regional Office for more information on application submittal dates). Once submitted, the permitting agency has 18 months to review it, request additional information, if needed, and complete the administrative process necessary to issue a final permit. The process for issuing the permit includes public notice, a 30-day public comment period and notification to neighboring states (generally those within 50 miles; called “affected states”) that could be affected by the LNG project, and may include a public hearing. If a state is issuing the permit (such as for an onshore LNG project when the state has an approved Title V program), EPA has a 45-day opportunity to review and object to any proposed part 70 permit. If EPA does not object to the permit (it is not necessary for EPA to concur), the state may issue the permit and the public has 60 days in which to *petition* EPA to object. This 60-day period begins at the end of EPA’s review period.²⁵

Operating permits are issued for a five-year term (or less if the permitting authority so chooses). Generally, a source must apply for a renewed permit at least 6 months before the permit expires.²⁶ The permit renewal process is the same as the issuance process.

Title V and parts 70 and 71 also require all sources, including new LNG projects, to pay annual fees to the permitting authority. Part 71 fees are based on the source’s actual emissions, while part 70 fees may be set on any basis (including emissions, source category, actual processing costs, or any combination of these).

²⁴ State operating permits will vary and may include permits other than Title V permits.

²⁵ 40 C.F.R. 70.8(d)

²⁶ 40 C.F.R. 70.5(a)(1)(iii) and 40 C.F.R. 71.5(a)(1)(iii).

New Source Performance Standards

The NSPS established under CAA section 111 and 40 C.F.R. Part 60 apply to new, reconstructed, or modified equipment used in specific source categories. In general, emission units at new LNG projects that may be subject to NSPS include storage vessels for volatile organic liquids and steam generating units.

NSPS Subpart Kb, 40 C.F.R. 60.110b – 60.117b, applies to new vessels that store volatile organic liquids if their capacity is greater than or equal to 40 m³ (10,567 gallons, though the NSPS regulations contain several exemptions). The subpart, however, does not apply to vessels that have a capacity greater than 151 m³ (39,890 gallons) and that store a liquid with a maximum true vapor pressure less than 3.5 kPa (0.5 psia). Section 60.111b defines a *volatile organic liquid* as “any organic liquid which can emit volatile organic compounds (as defined in 40 C.F.R. 51.100) into the atmosphere.” 40 C.F.R. 51.100(s)(1) excludes methane from the definition of volatile organic compound. If LNG storage tanks store methane and do not store volatile organic liquids, they are not considered affected facilities for the purposes of this NSPS.

NSPS Subpart Db (40 C.F.R. 60.40b(a)) applies to steam generating units that commence construction, modification, or reconstruction after June 19, 1984, and that have a heat input capacity of greater than 100 MMBtu/hr. Section 60.41b defines a “steam generating unit” as:

“a device that combusts any fuel or byproduct/waste to produce steam or to heat water or any other heat transfer medium. This term includes any municipal-type solid waste incinerator with a heat recovery steam generating unit or any steam generating unit that combusts fuel and is part of a cogeneration system or a combined cycle system. This term does not include process heaters as they are defined in this subpart.”

Depending on the project’s design, fuel burning units at LNG projects may not be considered steam generating units, and if so then Subpart Db does not apply. A NSPS determination, if applicable, for an individual LNG project will be based upon information submitted in the permit application.

CAA Section 112 Hazardous Air Pollutant Standards

Pursuant to CAA section 112, EPA has not issued any National Emission Standard for Hazardous Air Pollutants (i.e., Maximum Achievable Control Technology standards) for LNG projects. However, states or local air control agencies may have applicable hazardous air pollutant standards (HAP). These programs vary from state to state and typically limit hazardous or toxic air emissions to specified ambient thresholds.

CAA Section 176(c) General Conformity

Section 176(c) of the CAA prohibits Federal entities from taking actions in nonattainment or maintenance areas that do not conform to the applicable implementation plan for the attain-

ment or maintenance of the NAAQS. The purpose of conformity is to ensure federal actions do not interfere with a plan's attainment or maintenance of such standards. A general conformity analysis is required for all federal actions unless otherwise exempt (e.g., actions covered by transportation conformity, actions with clearly de minimis emissions, exempt actions listed in rule, or actions covered by an agency's own presumed to conform list). Some emissions are excluded from a conformity determination, such as those already subject to new source review; those that are not reasonably foreseeable, and those indirect emissions for which the federal entity has no continuing program responsibility. A federal agency can demonstrate conformity under EPA's implementing regulation, 40 C.F.R. Part 93, in a number of ways, including; (1) showing emission increases are already included in a SIP; (2) obtaining an agreement from a state to include increases in a SIP; (3) modeling that shows that there will not be any new violations of the NAAQS and/or no increase in the frequency/severity of existing violations; or (4) offsets.

For deepwater ports, MARAD/USCG completes the general conformity analysis, if applicable, in consultation with the relevant state, and EPA provides comments on a draft conformity determination. For onshore and near shore projects, FERC is responsible for the general conformity analysis. For dredging projects, the USCG may do a separate analysis.

Requirements Related to Water Quality

For any LNG project that involves the discharge of pollutants into waters of the United States, including the territorial seas, or the contiguous zone or ocean,²⁷ EPA and, in some cases, a state, tribe or U.S. territory, administers applicable Clean Water Act (CWA) sections. EPA also evaluates whether and how the Marine Protection, Research, and Sanctuaries Act (MPRSA) applies to a project's activities. EPA's regulatory and oversight actions for LNG projects varies based upon the location and design of an individual LNG project, as well as associated construction and operational activities.

This section of the *Technical Appendix* presents an overview of potentially applicable sections of the CWA and MPRSA (and associated EPA regulations), and briefly discusses how these sections would apply for offshore projects and then for onshore and near shore projects. This section also briefly discusses requirements for associated activities that operators may need to consider that may take place at the location of the proposed project or at a remote location. Prospective LNG project operators are encouraged to contact the appropriate water permitting agencies, including the EPA Regional Office and EPA Headquarters, very early in the project planning phase to discuss water quality-related permitting requirements.

National Pollutant Discharge Elimination System Permit Program

Under the CWA, the dischargers of pollutants from any point source into waters of the United States, including the territorial seas, are required to obtain an National Pollutant Discharge Elimination System (NPDES) permit.²⁸ Section 402 of the CWA establishes the

²⁷ Waters beyond the territorial seas include the "contiguous zone" and "ocean". See CWA § 502 (9) & (10). See also Presidential Proclamation 5030 (March 10, 1983) (Exclusive Economic Zone of the United States of America).

²⁸ See CWA §§ 301(a) & 402(a).

NPDES permitting program. The NPDES permit program also applies to any point source, other than a vessel or floating craft, in the marine waters more than three nautical miles from shore.²⁹ Under EPA regulations at 40 C.F.R. 122.3(a), this exclusion for vessels and other floating craft does not apply to discharges when the vessel is operating in a capacity other than as a means of transportation, such as an energy facility or when secured to the bed of the ocean, contiguous zone, or waters of the United States for the purpose of energy development. In most cases, the NPDES permit program is administered by authorized states³⁰ or tribes, which are responsible for permitting discharges to state waters.³¹ EPA issues all CWA section 402 NPDES permits for the discharges in marine waters more than three miles from shore. NPDES permits are issued for a period of five years.

The NPDES permit includes limits on pollutants that represent application of various technology-based standards, and any more stringent limits necessary to meet applicable water quality standards. In addition, no NPDES permit authorizing a discharge into the territorial sea, contiguous zone, or ocean can be issued except in compliance with EPA's ocean discharge criteria. 33 U.S.C. § 1343(a). NPDES permits also regulate the location, design, construction, and capacity of cooling water intake structures to minimize adverse environmental impact. 33 U.S.C. § 1326(b). Finally, NPDES permits apply to discharges that are continuous and/or periodic, and regardless of whether the discharge results from an industrial process or from exposure of industrial activities and materials to precipitation.

According to NPDES regulations, “[t]echnology-based treatment requirements under section 301(b) of the Act represent the minimum level of control that must be imposed in [an] NPDES permit.” 40 C.F.R. 125.3(a). Technology-based limits are based on: national regulations applicable to specific industrial point source categories; the “best professional judgment” (BPJ) of the permit writer if EPA has not established industry-wide regulations; or a combination of the two methods when the nationally-applicable regulations apply only to certain aspects of the discharger's operation or to certain pollutants. 40 C.F.R. 125.3(c). In deriving BPJ limits, the permit writer considers: (1) the appropriate technology for the category or class of point sources of which the permit applicant is a member, based on all available information, and (2) any unique factors relating to the applicant. EPA's regulations require the statutory factors from CWA section 304(b) to be considered by permit writers in setting case-specific limitations, as well as “factors unique to the applicant.” 40 C.F.R. 125.3(d)(3) & (c)(2)(ii). In addition, certain permit conditions apply to all NPDES permits. 40 C.F.R. 122.41.

Effluent Limitations for Discharged Pollutants

CWA section 301(b) specifies the type of technology-based limitations applicable to different types of pollutants that may be discharged. Conventional pollutants include biochemical oxygen demand measured over five days (BOD₅), total suspended solids (TSS), fecal coliform, pH, and oil and grease. Toxic pollutants, including 126 “priority pollutants,” are listed in the regulations at 40 C.F.R. Part 423, Appendix A. All other pollutants are “non-con-

²⁹ See CWA § 502 (12) (definition of “discharge of a pollutant”).

³⁰ cfpub.epa.gov/npdes/statestats.cfm

³¹ For more information about the NPDES permit program see cfpub.epa.gov/npdes/

ventional” pollutants. The technology-based standards in section 301(b) vary depending on whether the relevant pollutants are conventional pollutants or nonconventional pollutants and toxic pollutants (e.g., best practicable control technology currently available (BPT) for all pollutants, best conventional pollutant control technology (BCT) for conventional pollutants, and best available technology economically achievable (BAT) for toxics and nonconventional pollutants).

In addition, for any pollutant, section 301(b)(1)(C) requires “any more stringent limitation necessary” to meet water quality standards, which typically are issued by states and submitted to EPA for approval (see discussion below of state water quality standards).

Technology-Based Effluent Limits

Section 304(b) describes the relevant factors EPA considers in establishing the limitations under the CWA’s technology-based standards. Section 304(b) directs EPA to establish regulations, commonly referred to as national effluent limitations guidelines (ELGs) that establish nationally-applicable effluent limitations that reflect the pollutant reductions attainable for a particular industrial point source category according to the CWA’s technology-based standards that vary depending on the pollutant parameter of concern. Under the BAT standard, EPA considers: age of equipment and facilities involved; process employed; engineering aspects of the application of various types of control techniques; process changes; cost of achieving effluent reduction; non-water quality environmental impact (including energy requirements); and such other factors as the Administrator deems appropriate. ELGs are technology-based, meaning they apply regardless of receiving water quality needs.

When identifying technology-based BPJ permit conditions for offshore projects, EPA takes into consideration the various available technology options. Open Rack Vaporization (ORV) uses surrounding seawater at ambient temperature to heat and re-gasify LNG. Submerged Combustion Vaporization (SCV) systems burn a portion of the re-gasified natural gas product to re-heat warming water. Intermediate Fluid Vaporization (IFV), also referred to as “shell and tube,” can operate in either an open or closed loop configuration.

Specific permitting conditions for projects employing closed loop technology (e.g., SCV and IFV operating in a closed loop cycle) will vary by permit, but conditions may be established for the following types of discharges: process-related discharges (e.g., periodic blowdown from re-gasification equipment, non-contact cooling water used in a ship’s electrical system to power the re-gasification system; anti-fouling additives and biocide agents).

For projects designed to use open loop technologies (e.g., ORV and IFV systems operating in an open loop mode), permit conditions may be established for process-related discharges (e.g., thermal effects, anti-fouling additives and biocide agents) and intake-related solids discharges (i.e., discharges of organisms through the system) as well as discharges related to general operation (e.g., periodic blowdown from re-gasification equipment and non-contact cooling water). Federal regulations require that deepwater port license applications must include, to the extent available, information for the project’s NPDES permit. If complete information is not available by the time MARAD must either approve or deny the application, the license for the deepwater port is conditioned upon the applicant receiving the

required discharge permit from EPA before any discharge activity that would require such a permit can occur. 33 C.F.R. 148.105(z).

For near shore projects, authorized states must establish BPJ permit conditions similar to those discussed previously for offshore facilities, assuming the project would have a direct discharge to surface waters at all. Onshore projects typically employ closed loop re-gasification technologies, which result in discharges of only non-contact blowdown. These discharges, as well as any other general operation discharges, are most frequently discharged to a local sewer system for treatment by a publicly owned treatment works.

State Water Quality Standards

Section 303(c) of the CWA requires every state to adopt water quality standards applicable to all water bodies or segments of water bodies that lie within the state. When a state (or eligible tribe) adopts and submits new or revised water quality standards to EPA, EPA approves or disapproves them. After EPA approval, the water quality standards are the applicable water quality standards for CWA purposes. Water quality standards include: (1) designated beneficial uses, (2) narrative and/or numeric water quality criteria to achieve those uses; and (3) an anti-degradation policy. States review their water quality standards at least once every three years and revise them as necessary. When writing a permit, the permit writer includes effluent limits as stringent as necessary to meet the most current approved and applicable water quality standards. For more information regarding how procedures for water quality standards are developed, refer to EPA's Water Quality Standards Regulation at 40 C.F.R. Part 131 and the *Water Quality Standards Handbook: Second Edition (1994)*.³² NPDES permits for onshore and near shore facilities include limits that are more stringent than technology-based limits when necessary to meet state water quality standards.

Ocean Discharge Criteria

Any NPDES permit issued for a discharge into the territorial sea or beyond also must comply with the EPA guidelines established under CWA section 403. These guidelines, the Ocean Discharge Criteria, are published at 40 C.F.R. Part 125 Subpart M. The Ocean Discharge Criteria require evaluation of degree of degradation from such discharges on marine resources, and specify procedures for permitting marine discharges. Permits for LNG projects that propose to discharge into waters of the territorial seas or beyond (i.e., near shore and offshore projects) may need to include conditions to comply with EPA's guidelines under this section.

Cooling Water Intakes

CWA section 316(b) requires that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact. Such impacts include death or injury to aquatic organisms by impingement (being pinned against screens or other parts of a cooling water intake structure) or entrain-

³² www.epa.gov/waterscience/standards/handbook/

ment (being drawn into cooling water systems and subjected to thermal, physical or chemical stresses).³³

Cooling water intake structures operated by new onshore LNG projects are subject to national performance standards promulgated under EPA's Phase I section 316(b) regulation if they meet the eligibility criteria established by that regulation. 40 C.F.R. 125.81.³⁴ The Phase I regulations apply to any new onshore projects that (1) use cooling water intake structures to withdraw water from waters of the United States; (2) are required to obtain an NPDES permit issued under CWA section 402; (3) have a design intake flow of greater than two million gallons per day; and (4) use at least 25 percent of water withdrawn for cooling purposes. 40 C.F.R. 125.81. If a new onshore LNG project uses less than 25 percent of its water for cooling purposes or does not meet the two million gallons per day intake flow threshold, the project must meet section 316(b) requirements as specified by the NPDES permit authority on a case-by-case basis using best professional judgment (BPJ). 40 C.F.R. 125.80(c).³⁵

EPA has stated that “water withdrawn for non-cooling purposes includes water withdrawn for warming by liquefied natural gas facilities.” 69 F.R. 41581. Consequently, warming waters used by an LNG project would not be considered “water withdrawn for cooling purposes” in determining whether an LNG project meets the threshold requirement of using at least 25 percent of water withdrawn for cooling purposes. Also, water used in a manufacturing process either before or after it is used for cooling is considered process water – not cooling water – for the purposes of calculating the percentage of a new facility's intake flow that is used for cooling purposes. 40 C.F.R. 125.83 & 125.133 (definition of cooling water).

EPA has not promulgated national section 316(b) performance standards applicable to any other type of LNG project. The recently promulgated Phase III section 316(b) regulations for new facilities explicitly exclude new near shore and offshore LNG projects from that rule. 40 C.F.R. 125.131(d). The Phase II section 316(b) regulations, in turn, apply exclusively to existing power-generating plants. 40 C.F.R. 125.91(a)(3). Finally, EPA has chosen not to promulgate national section 316(b) performance standards for any other existing facilities. 71 Fed Reg. 35006 (June 16, 2006). Therefore, new near shore and offshore LNG projects, as well as all *existing* onshore, near shore or offshore LNG projects, are subject to regulation under section 316(b) on a case-by-case BPJ basis. 40 C.F.R. 125.131(d); 40 C.F.R. 125.90(b).

Storm Water Discharges Associated with Industrial Activity

CWA section 402(p) directed EPA to develop a phased approach to regulate storm water discharges under the NPDES program. As relevant to LNG projects, EPA published a final regulation on the first phase of this program, establishing permit application requirements

³³ For more information see www.epa.gov/waterscience/316b/

³⁴ For more information see www.epa.gov/npdes/pubs/LNG_clarification_memo.pdf

³⁵ For more information see www.epa.gov/npdes/pubs/LNG_clarification_memo.pdf

for “storm water discharges associated with industrial activity.” In addition, EPA’s NPDES Multi-Sector General Permit (MSGP) for industrial storm water currently authorizes storm water discharges associated with industrial activity for most areas of the United States where a state, tribe, or territory is not authorized to administer the NPDES permit program.³⁶

Discharges of storm water associated with construction activity are subject to the NPDES permit program. This means, for example, the construction or expansion of an onshore LNG project that would disturb more than five acres of total land area, and in many cases, more than one acre. Storm water discharges associated with industrial activity at any LNG project (onshore, near shore, or offshore) where industrial activity and materials are not sheltered to prevent exposure to storm water also are subject to the NPDES permit program. The operator of an LNG project could obtain coverage through either an individual permit or an appropriate general permit during the onshore phase of any project that requires large land area disturbance. Most states have been authorized to administer the NPDES permitting program for storm water. For those few states (e.g., Massachusetts) where EPA is the permitting authority, storm water discharges associated with construction of the project would be need to be authorized under EPA’s, as opposed to a state’s, Construction General Permit.³⁷

Permitting for Discharges of Dredged or Fill Material

CWA section 404 establishes a permit program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. The basic premise of the program is that no discharge of dredged or fill material may be permitted if: (1) a practicable alternative exists that is less damaging to the aquatic environment or (2) the nation’s waters would be significantly degraded. When applying for a permit, it is the applicant’s responsibility to show that it has, to the extent practicable:

- Taken steps to avoid impacts to all waters of the United States;
- Minimized potential impacts on waters of the United States; and
- Provided compensation for any remaining unavoidable impacts.

The U.S. Army Corps of Engineers (Corps) has the primary responsibility for administering the CWA section 404 regulatory permit program. Unless authorization is available under a general permit, an *individual permit* is required. An individual permit is required for potentially significant impacts. Individual permits are reviewed by the Corps, which evaluates applications under a public interest review, as well as the environmental criteria set forth in the CWA section 404(b)(1) guidelines.

For most discharges that will have only minimal adverse effects, a *general permit* may be appropriate. General permit authorization is available for activities that the Corps determines

³⁶ For more information on the storm water MSGP see cfpub.epa.gov/npdes/stormwater/msgp.cfm

³⁷ See Final National Pollutant Discharge Elimination System General Permit for Storm Water Discharges from Construction Activities, 68 FR 39087, July 1, 2003. A complete discussion of the Construction General Permit with accompanying Fact Sheet, Notice of Intent forms and filing instructions can be found at www.epa.gov/npdes/stormwater

are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment. 33 U.S.C. § 1344(e)(1). The general permit process generally eliminates individual review and allows certain activities to proceed with little or no delay, provided that the general or specific conditions for the general permit are met.

Under its CWA section 404 authorities, EPA is responsible for the development and interpretation of the environmental criteria used by the Corps in evaluating permit applications (i.e., the CWA section 404(b)(1) guidelines) and maintains a review and comment role in the issuance of section 404 permits. EPA has the ability to elevate specific concerns through a formal dispute resolution process outlined in the 1992 CWA Section 404(q) Memorandum of Agreement between the EPA and the Department of the Army.³⁸ EPA also has authority to prohibit, deny, or restrict the discharge of dredge or fill material at a defined site under section 404(c) (i.e., veto authority). States also have a role in section 404 permit decisions, through state program general permits, water quality certification (see discussion below of state water quality certification), or program assumption (Michigan and New Jersey). EPA approves and oversees state and tribal assumption of the 404 program. The procedures and criteria for the issuance of section 404 permits can be found in the Corps' regulations at 33 C.F.R. Parts 320 to 330. The section 404(b)(1) guidelines, and relevant definitions (such as waters of the United States) can be found in EPA's regulations at 40 C.F.R. Part 230.

Regulation of Ocean Dumping

The Marine Protection, Research, and Sanctuaries Act (MPRSA), 33 U.S.C. §§ 1401 *et seq.*, (also known as the Ocean Dumping Act) prohibits the dumping of material into the ocean that would unreasonably degrade or endanger human health or the marine environment. The MPRSA regulates: (1) the transportation of material from the United States for the purpose of dumping it into ocean waters (those waters seaward of the baseline from which the territorial sea is measured); (2) the transportation of material by a U.S.-owned or flagged vessel from any location for the purpose of dumping it into ocean waters; and (3) the dumping of material transported from outside the United States by a non-U.S. vessel in the territorial sea and contiguous zone, to the extent that the dumping of material affects the territorial sea or U.S. territory. The MPRSA definition of "dumping" excludes construction of any fixed structure or artificial island for a purpose other than disposal when otherwise regulated by federal or state law or occurring pursuant to an authorized federal or state program. Therefore, placement of a fixed structure for a near shore or offshore LNG project would not constitute dumping. The MPRSA definition of "dumping" also excludes a disposition of any effluent from any outfall structure to the extent that such disposition is regulated under the provisions of the CWA. 33 U.S.C. §§ 1251 *et seq.*

Virtually all material from the United States that is dumped in the ocean today is dredged material (i.e., sediments) removed from the bottom of navigable waters in order to maintain

³⁸ This agreement applies to regulatory authorities under section 10 of the RHA of 1989; section 404 of the CWA; and section 103 of MPRSA.

navigation channels and berthing areas.³⁹ In the case of dredged material, the decision to issue a permit is made by the Corps, using EPA's environmental criteria and subject to EPA's concurrence. For all other materials, EPA is the permitting agency. EPA also is responsible for designating recommended ocean dumping sites for all types of materials.⁴⁰ The criteria and procedures for ocean dumping permits and for the designation of ocean dumping sites can be found in EPA's ocean dumping regulations at 40 C.F.R. Parts 220 to 229.

Proposed discharges of dredged or fill material into waters of the United States that lie inland of the baseline from which the territorial sea is measured are evaluated under the CWA. Because both CWA section 404 and the MPRSA apply to the disposition of material to the waters of the territorial sea, there is a potential for a jurisdictional overlap between these two programs. In general, where the discharge of dredged material into the territorial sea would be for the primary purpose of *fill*, such as the use of dredged material for beach nourishment, island creation, or construction of underwater berms, the discharge is evaluated under CWA section 404. The *disposal* of dredged material in the territorial sea is evaluated in accordance with the MPRSA.

Discharges Affecting Navigation

Section 10 of the Rivers and Harbors Act of 1899 (RHA), 33 U.S.C. 403, establishes a program to regulate activities affecting navigation in all domestic waters, including wetlands. The RHA requires a permit for any work or structure, including construction, excavation, or deposition of materials, in or affecting the course, condition, location, or capacity of navigable waters of the United States (those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce) 33 C.F.R. 322.2(a) and artificial islands, installations, or other devices in the subsoil or on the seabed of the outer continental shelf. Activities requiring RHA section 10 permits include structures (e.g., piers, wharfs, breakwaters, bulkheads, jetties, weirs, transmission lines) and work such as dredging or disposal of dredged material, or excavation, filling, or other modifications to the navigable waters of the United States.

Section 10 permits are issued by the Corps, often in conjunction with a CWA section 404 permit. EPA can comment on RHA section 10 permits as part of the Corps' public interest review process (in response to the Public Notice for a permit application).

USCG regulations require that project operators must submit the information required to obtain a permit for placement of structures and the discharge of dredged or fill material with their deepwater port license application. 33 C.F.R. 148.105(aa).

³⁹ www.epa.gov/owow/oceans/regulatory/dumpdredged/dredgemgmt.html

⁴⁰ www.epa.gov/owow/oceans/regulatory/dumpdredged/oceansites.html

Disposition of Solid Materials in U.S. Waters Generally

EPA maintains a review and comment role in the oversight of dredge and fill activities depending on the nature and location of the activity. For example, pipeline construction activities offshore, near shore, or onshore may require permits under the CWA, MPRSA, or RHA. In other cases, significant impacts are often associated with the onshore fabrication of the gravity-based structures (GBS) that eventually are transported offshore for placement on the seabed. These impacts include coastal wetlands loss, sea grass bed disturbance and loss, and dredged material management.

Project operators (offshore, near shore, or onshore) may engage in activities such as dredging and pipeline construction in conjunction with the construction and/or operation of their projects. EPA maintains a role in the review of many permits that these associated activities may require, such as CWA section 404 permits and section 10 Rivers and Harbors Act permits. Hundreds of miles of new natural gas pipelines have been proposed through coastal wetlands in conjunction with LNG projects. Because individual permit and approval requirements are determined on a project-by-project basis, project operators are strongly encouraged to engage EPA Regional and Headquarters staff early in the development of their project.

Oil Spill Prevention

CWA section 311 establishes a program for the prevention and abatement of, and remedial response to, oil and hazardous substance spills to the navigable waters of the United States, adjoining shorelines, or into or upon the waters of the contiguous zone, or in connection with activities under the Outer Continental Shelf Lands Act. 40 C.F.R. Parts 110, 112, 116, and 117. Section 311 imposes requirements for reporting the release of oil and hazardous substances. This section is jointly administered by EPA and the USCG depending on the location of the discharge and nature of the discharge (e.g., nontransportation-related).

Subparts A through C of 40 C.F.R. Part 112 are often referred to as the “SPCC Rule” because they describe the requirements for certain facilities to prepare, amend and implement Spill Prevention, Control and Countermeasure (SPCC) Plans. SPCC Plans are a cornerstone of EPA’s strategy to prevent oil spills from reaching our nation’s waters. Unlike oil spill contingency plans that typically address spill cleanup measures after a spill has occurred, SPCC Plans work to ensure that containment and other countermeasures are in place to prevent and control oil spills, including those resulting from human operational error or equipment failures, from reaching navigable waters.⁴¹

EPA does not exercise jurisdiction to regulate oil spill prevention activities for deepwater ports under CWA section 311(j)(1)(C). Under Executive Order 12777, the Department of Transportation has been delegated authority to regulate transportation-related onshore facilities, deepwater ports, and vessels under this section.

⁴¹ For more information about EPA’s oil spill program and EPA’s SPCC compliance assistance guides see www.epa.gov/oilspill

However, EPA maintains a regulatory and enforcement role under CWA Section 311 for onshore and near shore facilities landward of the coast line. Executive Order 12777 delegated authority to EPA to regulate nontransportation-related onshore projects and 40 C.F.R. 112 Appendix B further indicates that EPA retains jurisdiction for nontransportation-related offshore facilities landward of the coast line. For those facilities within EPA jurisdiction, 40 C.F.R. 112 applies if the facility meets the applicability criteria of the rule – i.e., the aggregate aboveground oil storage capacity is greater than 1,320 gallons or the aggregate completely buried storage capacity is greater than 42,000 gallons and, due to facility location, could reasonably be expected to discharge oil in quantities that may be harmful, as described in 40 C.F.R. part 110, into or upon navigable waters of the United States or adjoining shorelines. The oil storage capacity of compressors and pumps counts toward the aggregate oil storage capacity of the facility.

State Water Quality Certification of Certain Federal Licenses or Permits

CWA section 401 provides that any applicant for a federal license or permit (e.g., an EPA-issued NPDES permit or a Corps-issued CWA section 404 permit) to conduct an activity that may result in a discharge into inland waters of the state or its territorial seas shall provide the federal permitting agency a certification from the state in which the discharge originates certifying that the license or permit complies with CWA requirements, including applicable state water quality standards. For such federal permits or licenses, states and authorized tribes can grant a CWA section 401 certification, condition its certification, deny certification, or waive its certification. If the state or authorized tribe has denied certification, the Federal agency may not issue the permit or license. 33 U.S.C. § 1341(a). If the certification is conditioned, the Federal agency then may either incorporate those conditions into the resulting permit or license or not issue the permit or license. 40 C.F.R. 124.55(a). As a result, the CWA section 401 certification process allows each state or authorized tribe to have direct input into projects that may affect its waters.

CWA section 401 certifications generally are issued by states or by tribes that EPA has determined to be eligible to be treated in the same manner as a state for purposes of the water quality standards program. EPA generally issues CWA section 401 certifications for discharges in Indian country where tribes have not been authorized to administer the CWA section 401 certification program. CWA section 401 applies to onshore and near shore facilities that may result in a discharge.

Federal regulations require applicants for deepwater port licenses to provide evidence, to the extent available, that the requirements of CWA Section 401(a)(1) will be satisfied. 33 C.F.R. 148.105(i)(1)-(2). If complete information is not available by the time MARAD must approve or deny the application, the license is conditioned on the applicant's ability to meet the requirements of section 401(a)(1). *Id.*

Other EPA Permitting Requirements and Considerations

This section of the *Technical Appendix* presents an overview of other permitting requirements and considerations that may apply to LNG projects.

Resource Conservation and Recovery Act

Subtitle D of the Resource Conservation and Recovery Act (RCRA) focuses on state and local governments as the primary planning, regulating, and implementing entities for the management of nonhazardous solid waste, such as household garbage and nonhazardous industrial solid waste. Subtitle D encourages environmentally sound solid waste management practices that maximize the reuse of recoverable material and fosters resource recovery. Subtitle C of RCRA is a comprehensive program to ensure that hazardous waste is managed safely from the moment it is generated until it is disposed. Subtitle C regulates, among other things, hazardous waste generators and treatment, storage and disposal facilities (TSDFs).

EPA does not anticipate that if operators of LNG projects were to generate hazardous waste that it would be disposed of at these LNG projects. If storage or treatment were conducted, it would likely be done in tanks or containers and treated hazardous waste would be sent off site within a period of 90 days for large quantity generators (LQGs) and 180 days for small quantity generators (SQGs) (see below). It is not likely that a storage or treatment permit would be required for LNG projects. Thus, operators at these projects would likely be subject only to the hazardous waste generator requirements if in fact they generate hazardous waste. A generator is any person, by site, whose processes and actions create hazardous waste, but who does not transport, treat, store or dispose of the wastes (see below for details). A summary of the federal requirements for hazardous waste generators follows. Many states have their own hazardous waste regulations based on the federal requirements; however, some states have developed regulations that are more stringent than those in the federal program. Project operators are encouraged to contact their EPA Regional Office, EPA Headquarters and relevant state agencies to discuss permitting requirements.

First, operators of LNG projects must determine if any of the wastes they generate at the project are hazardous wastes according to 40 C.F.R. Part 262.10. Listed hazardous wastes are defined in 40 C.F.R. 261, Subpart D. Additionally, operators must determine if the project's waste exhibits the characteristics of ignitability, corrosivity, reactivity or toxicity using a standardized test method or by applying general knowledge of the waste's properties, pursuant to 40 C.F.R. 261 Subpart C. Operators at these projects must also analyze wastes that are potentially hazardous, such as used oil and antifreeze, to determine whether they are hazardous waste or used oil (as defined in 40 C.F.R. Part 279) and whether they need to be managed in accordance with RCRA Subtitle C regulations. 40 C.F.R. Parts 260-279. If operators generate hazardous waste, operators would then be required to measure the amount of hazardous waste generated per month to determine their generator category (e.g., large quantity generator [LQG], small quantity generator [SQG] or conditionally exempt small quantity generator [CESQG]), according to 40 C.F.R. Part 262.10 (b) and 261.5 (b) & (c). If

operators determine that hazardous waste is being generated and their project is either a LQG or SQG, the operator must then obtain an EPA identification number for his/her LNG project by filling out a copy of EPA Form 8700-12 and sending it to the contact listed on the form. 40 C.F.R. 262.12.

Operators of LNG projects may then accumulate hazardous waste on site without a permit for up to 90 days for LQGs and 180 days for SQGs (40 C.F.R. Part 262.34). Hazardous waste can be accumulated in containers, tanks, drip pads, or containment buildings, if applicable, as long as the operator complies with the specified technical standards for each unit type, found in 40 C.F.R. 262.34, 40 C.F.R. 265 Subpart J, 40 C.F.R. 265 Subpart I, 40 C.F.R. 265 Subpart W, and 40 C.F.R. 265 Subpart DD. Also, hazardous waste may be treated in tanks or containers without the need to obtain a permit provided the treated hazardous waste is sent off site within a period of 90 days for LQGs and 180 days for SQGs.

Operators that qualify as CESQGs must manage their hazardous wastes according to the requirements in 40 C.F.R. 261.5, which include identifying all the hazardous waste generated, accumulating no more than 1,000 kilograms of hazardous waste at any time, and ensuring that hazardous waste is delivered to a person or facility that is authorized to manage it. For CESQGs, hazardous waste can be accumulated until the generator has generated more than 1,000 kilograms of hazardous waste, at which point the provisions in 40 C.F.R. 262 governing SQGs become applicable.

If applicable, operators of LNG projects must meet recordkeeping requirements of 40 C.F.R. Part 262, Subpart D depending on their generator status. Specified records must be maintained for 3 years according to 40 C.F.R. Parts 262.40 to 262.41. Additionally, operators of LNG projects must meet emergency response and preparedness and prevention requirements found in 40 C.F.R. 262.34 and 40 C.F.R. 265 Subparts C and D.

Operators of LNG projects must ensure that any hazardous waste that is generated meets the appropriate treatment standards prior to land disposal and maintain a waste analysis plan if treating hazardous waste on site, according to 40 C.F.R. 268.7. Additionally, as required, project operators must send notifications and certifications to the off-site TSDF that will be handling their hazardous waste. 40 C.F.R. 268.7.

If shipping hazardous waste off-site, operators of LNG projects must package, label, mark, and placard their hazardous waste following Department of Transportation requirements and then ship it using a registered hazardous waste transporter to a hazardous waste TSDF (40 C.F.R. Parts 262.30 to 262.33). Project operators shipping hazardous waste off site must also use an approved version of the manifest system (EPA Form 8700-22). 40 C.F.R. 262.12. If exporting or importing hazardous waste, operators of LNG projects must follow the requirements for exports and imports, including submission to EPA of notification of intent to export and receiving from EPA an acknowledgement of consent from the receiving country (40 C.F.R. 262 Subparts E & F).

Operators that qualify as large quantity generators must develop and implement a contingency plan. 40 C.F.R. 262.34(a)(4). The contingency plan must be designed to minimize hazards to human health and the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water (40 C.F.R. 262.34 (a)(4)). While operators that qualify as SQGs are not required to develop a contingency plan, they are required to maintain and operate their facilities to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste to the environment in compliance with 40 C.F.R. 262.34 (d)(4).

If applicable, operators of LNG projects must use various monitoring and control mechanisms for units that store or treat hazardous waste pursuant to 40 C.F.R. Part 265 Subpart CC:

- Control volatile organic compound (VOC) emissions from hazardous waste management activities.
- Reduce organic emissions from process vents associated with certain recycling activities and equipment that is in contact with hazardous waste that has significant organic content.
- Control VOCs from hazardous waste tanks, surface impoundments, and containers using fixed roofs, floating roofs, or closed-vent systems routed to control devices.

Finally, when a hazardous waste generator ceases to generate hazardous waste, it is subject to certain “closure” requirements. The generator must decontaminate and remove all hazardous waste contaminated equipment and structures, and minimize the need for further maintenance of the site. 40 C.F.R. 262.34(a)(iv)(B) & 265.201(d). Additionally, the generator must meet unit-specific closure standards for tanks, containment buildings, and drip pads, if applicable, according to 40 C.F.R. 265 Subpart G.

Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601, *et seq.*, better known as the “Superfund Act,” addresses cleanup of hazardous substances. CERCLA and its implementation documents empower EPA and other agencies to identify and prioritize sites for cleanup, and to order or carry out environmental remediation. Subject to limited defenses, CERCLA imposes strict liability for environmental cleanup on persons connected to facilities from which there are releases into the environment. CERCLA also mandates reporting hazardous substance releases to the National Response Center. In conjunction with CWA section 311, CERCLA provides for federal preparation of the National Contingency Plan for responding to a hazardous substances release. CERCLA is administered by federal agencies, not states. Operators are encouraged to discuss with their EPA Regional Office and EPA Headquarters if they believe that their project could result in the release of hazardous substances subject to EPA jurisdiction.

Environmental Justice

EPA's Office of Environmental Justice defines environmental justice as:

“The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EPA has this goal for all communities and persons across this Nation. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.”⁴²

Pursuant to Executive Order 12898, Federal agencies “shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions.”

In particular, the NEPA review process, which EPA participates in for all types of LNG projects, presents one of the critical avenues for agencies to consider environmental justice issues. The Council on Environmental Quality's *Environmental Guidance Under the National Environmental Policy Act* states that “Environmental justice issues may arise at any step of the NEPA process and agencies should consider these issues at each and every step of the process, as appropriate. Environmental justice issues encompass a broad range of impacts covered by NEPA, including impacts on the natural or physical environment and interrelated social, cultural and economic effects.”⁴³

In conjunction with the federal agencies' consideration of environmental justice issues, parties intending to operate LNG projects may wish to consider whether or not their proposed actions present environmental justice issues before they submit their permit applications to EPA.

⁴² More information from EPA's Office of Environmental Justice can be found at www.epa.gov/environmentaljustice/index.html

⁴³ Council on Environmental Quality, *Environmental Justice: Guidance Under the National Environmental Policy Act*, 1997. ceq.eh.doe.gov/nepa/regs/ej/justice.pdf

Appendix A: Acronyms and Abbreviations

BACT	Best Available Control Technology
BAT	Best Available Demonstrated Control Technology
BCT	Best Control Technology
BOD₅	Biochemical Oxygen Demand Measured Over Five Days
BPJ	Best Professional Judgment
BPT	Best Practicable Control Technology Currently Available
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESQG	Conditionally Exempt Small Quantity Generators
CFR	Code of Federal Regulations
CO	Carbon Monoxide
Corps	United States Army Corps of Engineers
DOT	U.S. Department of Transportation
DPA	Deepwater Port Act
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EIA	Energy Information Administration
EIS	Environmental Impact Statement
ELG	Effluent Limitation Guideline
EPAct	Energy Policy Act
FERC	Federal Energy Regulatory Commission
FIP	Federal Implementation Plan
FONSI	Finding of No Significant Impact
GBS	Gravity Based Structures
HAP	Hazardous Air Pollutant

IFV	Intermediate Fluid Vaporization
LAER	Lowest Achievable Emissions Rate
LNG	Liquefied Natural Gas
LQG	Large Quantity Generators
MACT	Maximum Achievable Control Technology
MARAD	Maritime Administration (U.S. Department of Transportation)
MPRSA	Marine Protection, Research, and Sanctuaries Act
MSGP	Multi-Sector General Permit
MTSA	Maritime Transportation Security Act of 2004
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NO₂	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards
NSR	New Source Review
OCS	Outer Continental Shelf
ORV	Open Rack Vaporization
PM	Particulate Matter
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
RHA	Rivers and Harbors Act
ROD	Record of Decision
SCR	Selective Catalytic Reduction

SCV	Submerged Combustion Vaporization
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SPCC	Spill Prevention, Control and Countermeasures
SQG	Small Quantity Generators
USC	United States Code
USCG	United States Coast Guard
VOC	Volatile Organic Compounds



United States
Environmental Protection Agency
Office of Policy, Economics, and Innovation
(MC 1803)
1200 Pennsylvania Ave., NW
Washington, DC 20460

Official Business
Penalty for Private Use \$300

EPA 230-B-06-001
November 2006
<http://www.epa.gov/opei/lng/index.htm>

