

EXECUTIVE SUMMARY

Introduction

Broadwater Energy LLC and Broadwater Pipeline LLC (jointly termed Broadwater¹) are proposing to construct, install, operate, and maintain a permanently moored, liquefied natural gas (LNG) import, storage, and regasification facility located a minimum of 9 miles from shore, and a new offshore natural gas pipeline to connect to the existing interstate natural gas transmission system in Long Island Sound. Broadwater has filed an application with the Federal Energy Regulatory Commission (FERC or the Commission) for the proposed Broadwater LNG Project (the proposed Project) under Sections 3(a) and 7(c) of the Natural Gas Act (NGA).

FERC staff prepared this final environmental impact statement (EIS) to fulfill the requirements of the National Environmental Policy Act (NEPA) and the Commission's implementing regulations. The purpose of the EIS is to provide the public and the permitting agencies with information about the potential environmental impacts of the proposed Project and its alternatives, and to recommend mitigation measures that would avoid or minimize adverse impacts to the maximum extent practical. We² prepared this EIS with the assistance of the following cooperating agencies: the Department of Homeland Security, U.S. Coast Guard (Coast Guard); the U.S. Army Corps of Engineers (COE); the U.S. Environmental Protection Agency (EPA); the National Oceanographic and Atmospheric Administration, National Marine Fisheries Service (NMFS); and the New York State Department of State (NYS DOS). The scope of the EIS was developed based on input from many sources, including the Broadwater application; the cooperating agencies; the New York State Department of Public Services³ (NYS DPS); the State of Connecticut Department of Environmental Protection; the State of New York Department of Environmental Conservation (NYS DEC); the New York State Office of Parks, Recreation and Historic Preservation; public open houses, scoping meetings, and comment meetings; letters received from the public; and from our own field inspections, research, and analyses.

Purpose and Need

The purpose of the proposed Project is to establish an LNG marine terminal capable of receiving imported LNG from LNG carriers, and storing and regasifying the LNG at an average sendout rate of 1.0 billion cubic feet per day at full development. The terminal would provide a new source of reliable, long-term, and competitively priced natural gas to the Long Island, New York City, and Connecticut markets by connecting to the existing subsea natural gas pipeline system owned by the Iroquois Gas Transmission System (IGTS). Broadwater estimates that approximately half of the natural gas sent out from the LNG terminal would be transported to New York City, about 25 to 30 percent to Long Island, and the remaining portion to Connecticut.

Approximately 85 percent of the gas consumed in the New York City, Long Island, and Connecticut market is currently delivered by pipeline from the Gulf of Mexico and Canada; production from those areas is projected to decline over the next 20 years. Conversely, energy consumption projections indicate that there will be an increasing need for natural gas in the region. In the past 10 years, electric power generating facilities in the region have increased output by about 5.6 percent per

¹ Broadwater Energy LLC is jointly owned by TCPL USA LNG, Inc. (a subsidiary of TransCanada Corporation) and Shell Broadwater Holdings LLC (a subsidiary of Shell Oil Company). Broadwater Pipeline LLC is owned by Broadwater Energy LLC.

² The pronouns "we," "us," and "our" refer to the environmental staff of FERC's Office of Energy Projects.

³ NYSDPS is the agency tasked by the governor of New York with the overall responsibility for consulting with FERC on siting and safety matters regarding Broadwater's application.

year, and the annual consumption of natural gas by those facilities increased by 100 billion cubic feet. The use of natural gas for electrical generation, rather than coal or oil, is directed toward meeting regional air quality objectives.

Natural gas transmission pipelines originating in the Gulf of Mexico and western Canada terminate in New York and New England, and the great distances between the sources and the markets increase the costs of gas while decreasing the reliability of the supply. The proposed Project would reduce the area's future need for new or expanded interstate natural gas pipelines by providing a local supply of natural gas that uses existing distribution facilities.

Project Description

The proposed LNG terminal would be in New York State waters of Long Island Sound, approximately 9 miles⁴ from the nearest shoreline, and generally north of the Hamlet of Wading River. The terminal would be a floating storage and regasification unit (FSRU) that would be attached to a yoke mooring system (YMS) that includes a mooring tower embedded in the seafloor. LNG would be delivered by LNG carriers, temporarily stored on the FSRU, vaporized (regasified), then transported in a new 21.7-mile-long subsea pipeline that would have an offshore connection with the existing IGTS pipeline that extends across Long Island Sound. Broadwater estimates that an average of 118 carriers per year (2 to 3 per week) would be needed to meet the Project's planned sendout volume at full development. LNG carriers would transit from the Atlantic Ocean into the Project Waterway (defined as the waterways transited from the outer boundary of the navigable waters of the U.S. to the FSRU). Inbound carriers would first stop at either the Point Judith Pilot Station (primary route) or the Montauk Pilot Station (alternate route). From the Point Judith Pilot Station, carriers would transit Block Island Sound north of Block Island, head generally west to enter Long Island Sound at its eastern end (an area known as the Race), and proceed to the FSRU. From the Montauk Pilot Station, carriers would head generally northwest to approach the Race, then proceed to the FSRU.

The FSRU, which would remain moored in place for the duration of the Project, would pivot or "weathervane" around the YMS in response to the prevailing wind, tide, and current conditions. It would be approximately 1,215 feet long and 200 feet wide, with a draft of approximately 40 feet and the upper deck about 82 feet above the waterline. The double-hulled FSRU would include a single berthing and unloading facility for LNG carriers with cargo capacities ranging from 125,000 to 250,000 cubic meters (m³); a total LNG storage capacity of 350,000 m³ (about 8 billion cubic feet); a closed-loop, natural gas-fired vaporization system to heat the LNG; and utility systems, crew quarters, and service facilities.

Broadwater proposes to use existing onshore facilities at either Greenport or Port Jefferson, New York to support construction and operation. Existing office, warehouse, and docking space would be available at either location. During construction, Broadwater would use an existing concrete coating yard outside of the New York/Connecticut area and a pipe storage area within an existing developed area at the Port of New York/New Jersey.

Project Schedule

As currently proposed by Broadwater, pipeline installation would begin with pre-lay surveys that would start in September 2009. In-water work on pipeline installation would begin in October 2009 and would be completed by April 2010. The YMS would be installed in October and November 2010.

⁴ Mileage is presented as statute miles except where otherwise noted.

Connection of the new pipeline from the YMS to the IGTS pipeline would take place in November 2010, and the FSRU would be connected to the YMS in December 2010. Broadwater anticipates design and fabrication of the FSRU and YMS would require approximately 3 years and proposes to be in service in late December 2010.

Reviews, Authorizations, and Permits

FERC is the federal agency responsible for authorizing applications to construct and operate LNG terminals that are onshore or in state waters, and interstate natural gas transmission facilities. The Commission will determine whether or not the Project should be approved. A final approval would be granted by FERC if, after consideration of both environmental and non-environmental issues, it finds that the proposed Project is consistent with the public interest.

The Coast Guard has regulatory responsibilities for certain aspects of the FSRU and for the LNG carriers. As part of that responsibility, the Coast Guard assessed the potential navigation safety and maritime security risks associated with the Project within the Project Waterway, identified strategies for managing potential risks, and addressed the suitability of the Project Waterway to support LNG carrier traffic. The methods used and results of the analysis are presented in the Coast Guard's Waterways Suitability Report (WSR), which is included in this EIS (Appendix C). In addition, the Coast Guard will review and adopt all or pertinent parts of this EIS to satisfy its applicable NEPA responsibilities. After issuance of the final EIS and completion of its review, the Coast Guard will issue a Letter of Recommendation that will provide FERC with the Coast Guard's final determination of whether or not the Project Waterway is suitable for the FSRU and the associated LNG carrier traffic.

FERC and the Coast Guard have shared reviews of the engineering, reliability, and safety aspects of the Project based on an agreement between the two agencies. This joint review began in late 2004 when FERC initiated its pre-filing process. FERC has the lead responsibility for review of the proposed subsea pipeline and LNG handling, storage, and regasification on the FSRU. The Coast Guard has the lead responsibility for assessing the safety and security of the FSRU as a marine facility and the LNG carrier operations while at berth and in transit to and from the FSRU in U.S. territorial waters. The evaluations, which have focused on the safety of the engineering design and the projected operational reliability, have resulted in recommended design changes and considerations to improve the safety of the facility. FERC and Coast Guard staff have also recommended the use of a certifying entity for the design, plan review, fabrication, installation, inspection, maintenance, and oversight of the FSRU and YMS. If the Project is approved and implemented, the Coast Guard would continue to have oversight of the safety and security aspects of the FSRU and the LNG carriers and would require both aspects of the Project to comply with applicable requirements for operation, security, and safety.

If FERC authorizes the Project and the Coast Guard issues a Letter of Recommendation indicating that the Project Waterway is suitable for LNG carrier traffic (with or without additional measures), the Coast Guard would propose establishing a Regulated Navigation Area to include measures of safety and security zones for the FSRU and LNG carriers. For the FSRU, the safety and security zone proposed by the Coast Guard would be a fixed circular zone with a radius of 1,210 yards (0.7 mile) from the center of the YMS that would be established for the life of the Project. For each LNG carrier, the Coast Guard has proposed a moving safety and security zone that would extend 2 nautical miles (2.3 miles) in front of the carrier, 1 nautical mile (1.2 miles) to the rear, and 750 yards (about 0.4 mile) to each side of the vessel during inbound and outbound transits. The estimated transit time for the moving safety and security zone to pass a fixed point would be about 15 minutes based on a carrier speed of 12 knots. The exact size and location of the safety and security zones would be determined through the Coast Guard's regulatory development process, which would include appropriate environmental analyses.

With the permission of the Coast Guard Captain of the Port, vessels other than those engaged in escorting an LNG carrier may be allowed to enter the moving safety and security zone.

In addition to FERC and the Coast Guard, other federal agencies have responsibilities for issuing permits or for evaluating compliance with relevant federal laws and regulations. The COE has permitting responsibility under the Rivers and Harbors Act and the Clean Water Act; EPA has regulatory authority under the Clean Water Act and the Clean Air Act; the U.S. Fish and Wildlife Service (FWS) and NMFS are responsible for reviewing the Project's compliance with Section 7 of the Endangered Species Act; and NMFS is responsible for reviewing compliance with the Magnuson-Stevens Fishery Conservation and Management Act and the Marine Mammal Protection Act. The New York State agencies with responsibilities for reviewing and permitting the Project consist of the following: NYSDEC has been delegated the permitting responsibilities under the Clean Water Act and the Clean Air Act; NYSDOS is responsible for reviewing federal agency actions and activities relative to the Coastal Zone Management Act, including a determination of consistency with New York's Coastal Management Program and the Long Island Sound Coastal Management Policies; and the New York State Office of Parks, Recreation and Historic Preservation is responsible for reviewing the Project's compliance with Section 106 of the National Historic Preservation Act.

On February 28, 2006, NYSDPS submitted its Safety Advisory Report; the report addressed state and local considerations for the Project and provided comments from NYSDOS, the New York State Emergency Management Office, the New York State Department of Transportation, the New York State Office of Homeland Security, and several local governmental entities. Appendix E of this EIS presents our response to the safety matters raised in the report as required by the Energy Policy Act of 2005.

Public Scoping

Public scoping began in November 2004, with Broadwater's submittal of a Letter of Intent to the Coast Guard and FERC's acceptance of Broadwater into its pre-filing process. In February 2005, FERC issued a pre-filing notice to approximately 2,200 interested parties, including federal, state, and local officials; agency representatives; conservation organizations; and local libraries and newspapers. In August 2005, FERC issued a notice informing the public of our planned EIS and public scoping meetings for the Project and requesting comments on environmental issues. In August 2005, the Coast Guard issued a notice requesting comments on the Letter of Recommendation for the Project; and in September 2005, FERC and the Coast Guard conducted joint public scoping meetings at Stony Brook and Shoreham, New York, and at East Lyme and Branford, Connecticut. The primary concerns expressed during the public scoping process were associated with health and safety, security, public access, industrialization of the Sound, and environmental impacts to the Sound.

FERC also conducted agency consultations, participated in interagency meetings and conference calls, and met with concerned agencies and non-governmental organizations to identify issues to be addressed in this EIS. The Coast Guard participated in many of these meetings, attended many other meetings held by groups of concerned citizens, conducted a Ports and Waterways Safety Assessment workshop and a Harbor Safety Working Group meeting as a part of its safety risk assessment, and established a sub-committee of the Area Maritime Security Committee to provide input to its review of potential risks to maritime security.

Comments on the Draft EIS and Development of the Final EIS

In November 2006, the draft EIS was mailed to agencies, individuals, and organizations and was submitted to EPA for formal public notice of availability in the Federal Register. The public notice established a comment period of 60 days, officially ending on January 23, 2007. Public comment

meetings on the draft EIS were conducted at Smithtown and Wading River, New York, and at New London and Branford, Connecticut. FERC also met with representatives of the Connecticut Long Island Sound Task Force on LNG to discuss the draft EIS. In addition to the written and verbal comments presented at the meetings, we received separate written comments on the draft EIS from November 2006 through preparation of the final EIS. FERC staff's responses to comments are provided in Appendix N of this final EIS. Where appropriate, the text of the EIS was revised in response to comments and as a result of our additional review of updated information following issuance of the draft EIS.

Safety and Security

The Coast Guard conducted an assessment of the Project's effect on the safety and security of the Project Waterway and issued its findings in the WSR. The WSR will support the Letter of Recommendation that the Captain of the Port will submit to Broadwater, FERC, and state and local agencies. The WSR is based on a systematic assessment of potential risks to navigation safety and maritime security associated with the proposed Project as it was described in Broadwater's Letter of Intent. The assessment of potential risks was evaluated in terms of the components of risk: threats, vulnerabilities, and consequences. The assessment led to the preliminary determination that additional measures would be necessary to make the Project Waterway suitable for LNG carrier traffic and identified additional measures that would provide for the safety and security of the proposed FSRU and LNG carriers; those measures will be considered by the Commission during its review of the proposed Project.

The WSR concludes that there are currently no known, credible threats against the proposed Broadwater facility, although periodic threat assessments must be conducted to ensure that the security measures in place remain appropriate to address unknown threats. There are many significant safety and security benefits associated with the location of the FSRU, especially with respect to threat and consequence since it would be remote from population centers. The Coast Guard has stated this remoteness would serve to reduce the attractiveness of the FSRU as a target, but the location would create some law enforcement challenges. Additional security resources would be needed to mitigate safety and security risks associated with the proposed Project, particularly trained law enforcement personnel and small boats. Further, additional marine firefighting resources may be required to mitigate fire risks associated with the Project. If the Coast Guard concludes that the needed resources are not available prior to initiation of operation, FERC would not provide Broadwater with final approval to operate the Project.

Hazard zones associated with a large release of LNG from the Project were calculated as part of assessing the suitability of the Project Waterway for LNG carrier traffic and the suitability of the proposed location of the FSRU. In addition, separate calculations and risk-based analyses were used for determining the size and shape of the proposed safety and security zones around the FSRU and the LNG carriers. None of the hazard zones around the FSRU extend to a population center due to the minimum 9 mile distance between the FSRU and land. Hazard Zones 1 and 2 would also not extend to the shore associated with transiting LNG carriers.

Potential Environmental Impacts

The potential environmental impacts of the proposed Project would be largely limited to the immediate vicinity of the proposed FSRU and pipeline during construction and the FSRU location during operation. Few impacts would be associated with use of the existing onshore office, warehouse, and industrial docking facilities and along the LNG carrier transit routes. Thus, the proposed Project, under normal operating conditions, would not be expected to impact sensitive onshore or nearshore resources such as wetlands, terrestrial wildlife and birds, freshwater fisheries, shellfish beds, eelgrass beds, residences, businesses, or county, state, or national parks. Broadwater developed the proposed siting and

design, as well as the construction and operation methods and procedures, in an effort to reduce the potential impacts of the proposed Project. In addition, we have recommended measures to avoid or further minimize potential impacts to the environment.

Construction

During Project construction, the primary impacts would be associated with installation of the 21.7-mile-long subsea pipeline, including physical disturbance of the seafloor/benthic habitat and temporary turbidity and sedimentation associated with the seafloor disturbance. As proposed by Broadwater, Project construction would disturb a total of 2,235.2 acres; most disturbance would be caused by anchor cable sweep. We determined that, if mid-line buoys were used on all eight anchors of the construction barges, cable sweep impacts would be substantially reduced and the total seafloor impacts would be about 263.6 acres. Therefore, we have recommended that Broadwater use mid-line buoys on all anchor cables during construction, or alternatively, use a dynamically positioned lay barge that would have little or no effect on the seafloor.

Plowing the pipeline trench would result in some turbidity in the water column during active construction. Turbidity plume modeling indicated that increases in turbidity would be greatest near the bottom, with little observable turbidity in the bottom waters beyond 1,600 feet from the area of active plowing. Modeling also indicated that the increase in turbidity in surface waters would be in compliance with New York State water quality standards and that turbidity levels would dissipate within approximately 12 hours of sediment disturbance.

Broadwater proposes to backfill approximately 10 percent of the pipeline trench and allow the rest of the trench to fill naturally. Results from other linear projects in Long Island Sound indicate that the success and timing of natural backfilling are uncertain. To minimize the potential for impacts of an open trench on the benthic habitat and associated biological resources, we included a recommendation that Broadwater actively backfill the entire trench immediately after pipeline installation.

Construction of the YMS would include pile driving, with the specific methods to be used to be determined after completion of detailed geotechnical surveys. We have included recommendations that Broadwater limit pile driving to seasons when federally listed species are virtually absent (December 1 through March 31) and that it coordinate with NMFS to determine the appropriate measures to avoid and minimize noise impacts of pile driving and other construction and operation activities on biological resources. We also have included additional recommendations to avoid and minimize potential construction impacts. Recommended measures include conducting geotechnical investigations; using Environmental Inspectors; minimizing substrate conversion; avoiding the use of toxic paint; developing appropriate plans for utility crossings, lighting, and spill control; and, if warranted, developing contingency methods for crossing Stratford Shoal and disposing of associated dredge material.

As a result of the mitigation measures proposed by Broadwater, along with our additional recommendations and state and federal controls, construction of the proposed Project would not result in a significant impact to the environment.

Operation

The primary environmental concerns during operation include potential impacts to water resources, aquatic biota (primarily fish, marine mammals, and federally listed threatened and endangered species), air emissions, and the human environment (such as recreational boating and fishing, visual resources, commercial fishing and shipping, and industrialization). Impacts associated with operation would continue for the life of the proposed Project (a minimum of 30 years). Impacts associated with

operation of the proposed Project, including the impacts of LNG carriers in transit and at berth, are summarized below.

In general, the use of carriers to ship LNG to the Project would result in a minimal increase in overall commercial shipping in Long Island Sound (by about 1 percent). Since the carriers would transit deepwater areas, normal LNG carrier operation would have little impact on offshore or nearshore resources such as bottom sediments and bottom dwelling biota, or on the shoreline and onshore resources such as shoreline erosion, wildlife, wetlands, threatened and endangered species, cultural resources, residences, and land use.

Impacts to water resources would primarily be associated with the intake and discharge of seawater by the FSRU and LNG carriers. Most of the water taken in by the FSRU would be used for ballast when discharging vaporized LNG. When taking on LNG from the carriers, the ballast water in the FSRU would be returned to the Sound. LNG carriers would take on water primarily for use in cooling and for ballast when LNG is being unloaded. The cooling water would be returned to the Sound, and the carriers would depart Long Island Sound with ballast water that was taken on. LNG carriers would not be expected to discharge any ballast water in the Project Waterway.

Annually, the water intake of the FSRU would average approximately 5.5 million gallons per day (mgd), with a maximum daily intake of 8.2 mgd during periods of peak gas sendout. Assuming that an average of 118 LNG carriers would deliver LNG to the FSRU each year, the carriers' average daily water intake of water from the Sound would be approximately 22.7 mgd, including ballast and cooling water. This total represents about 0.005 percent of the total daily seawater inflow to the Sound.

Discharges from the FSRU would be at approximately the ambient temperature of the Sound. Water discharges for the LNG carriers, primarily associated with cooling onboard machinery, would cool to within 1.5°F of ambient temperature within 75 feet of the discharge point. These discharges would be comparable to those of other large, steam-driven ships in the global commercial shipping fleet; they would not raise the overall temperature of the Sound or aggravate conditions that contribute to hypoxia. Temperature-related impacts associated with operation of the FSRU and LNG carriers would be localized and minor.

The primary impact to biological resources during operation would be the impingement/entrainment⁵ of ichthyoplankton (the eggs and larvae of fish drifting in the water column) due to the intake of water from the Sound. Based on recent ichthyoplankton surveys and the volume of water taken in by the FSRU and LNG carriers, the total potential impingement/entrainment of ichthyoplankton would be less than 0.1 percent of the estimated total stock in the central basin of the Sound, assuming even distribution throughout the basin and no design or operational mitigation measures to reduce impacts. Based on the water depth of the FSRU intake structures and the low intake velocity, the actual impingement/entrainment would be considerably less than the average densities incorporated into our loss estimates. As a result, there would be a negligible long-term impact to ichthyoplankton and, therefore, on the general fisheries resources of the Sound.

NMFS has designated the seafloor and the water column of Long Island Sound as essential fish habitat (EFH) and has identified 19 fish species as EFH-managed species in the area of the proposed YMS, FSRU, and pipeline. Additionally, designated EFH occurs within the LNG carrier transit route for various lifestages of 30 species. Although EFH would be affected by seafloor disturbance and temporary

⁵ Impingement/entrainment refers to organisms being taken into the FSRU and LNG carriers with the water or being held on the intake screen due to the flow of water through the screen.

turbidity during construction and by the limited sediment conversion of the seafloor from soft sediment to hard substrate, construction would not cause significant impacts to EFH resources.

During operation, the primary impact to EFH-designated fish species would be associated with impingement/entrainment during water intake. Less than 10 percent of the estimated impingement/entrainment would be composed of EFH-designated species based on field surveys. As a result, the impact to EFH-designated species would be negligible but long term.

Potential impacts to federally listed threatened and endangered species were assessed in coordination with FWS and NMFS, and primarily focused on potential increases in the risk of vessel collisions and noise. FWS stated that, except for occasional transient individuals, no threatened or endangered species within its purview occur in the vicinity of the offshore portions of the proposed Project. FWS further stated its concurrence with FERC's determination that the proposed marine terminal would not be likely to adversely affect federally listed avian species because the impacts would likely be insignificant or discountable.

NMFS identified seven federally listed threatened or endangered species that could occur in the vicinity of the proposed Project in Long Island Sound, including four sea turtle species and three whale species. The primary potential impacts to these federally listed threatened and endangered species would be vessel strikes and noise. Broadwater has developed a Draft Vessel Strike Avoidance and Reporting Plan in coordination with NMFS - Protected Resources Division. We have recommended that Broadwater continue consultation with NMFS - Protected Resources Division to finalize the vessel strike avoidance measures specific to the proposed Project. Based on our review and consultation with NMFS, we have determined that the Project would not be likely to adversely affect any federally or state-listed threatened or endangered species.

Air emissions from the FSRU would primarily be generated by burning natural gas to heat the LNG during the vaporization process. The Long Island Sound area has been categorized by EPA as "nonattainment" for ozone and particulate matter with a diameter of 2.5 micrometers or less, which means that additional mitigation may be needed to reduce emissions and offset any impacts of future projects, such as the Broadwater LNG Project. All emissions from construction and operation must be in compliance with air quality permits. With implementation of the mitigation and offsets determined by NYSDEC and adherence to the applicable permit requirements, impacts to regional air quality during operation of the Project would be insignificant but would continue for the life of the Project.

Section 176(c)(1) of the CAA requires Federal agencies to assure that their actions conform to applicable State implementation plans (SIPs) for achieving and maintaining the NAAQS for criteria pollutants. For there to be conformity, a Federal action must not contribute to new violations of standards for ambient air quality, increase the frequency or severity of existing violations, or delay timely attainment of standards in the area of concern (e.g., a State or a smaller air quality region). As the New York SIP budget components that affect Broadwater are currently in development, Broadwater has initiated discussion with NYSDEC regarding General Conformity and the Project's emissions that are subject to General Conformity. Project emission data have been submitted to NYSDEC and are being evaluated by NYSDEC for incorporation into the SIP emission budget for the relevant ozone SIPs.

The General Conformity Analysis for the proposed Project indicates that the Project would be constructed and would operate in conformance with the New York SIP under the current 1-hour ozone standard, insofar as it applies in the future. Broadwater anticipates that measures undertaken in conformance with the 1-hour ozone SIP will similarly conform under the 8-hour SIP, currently being revised by the NYSDEC. Upon the determinations concerning the SIP budgets, Broadwater will continue to coordinate with FERC, NYSDEC, and USEPA to satisfy the applicable General Conformity

requirements. Appendix K contains a preliminary General Conformity Analysis. FERC will evaluate the magnitude and potential impact of the emissions and determine whether mitigation is necessary.

Commercial and recreational activity would not be allowed within the fixed safety and security zone around the proposed FSRU throughout the life of the Project. The site proposed for the FSRU is not in a traditional shipping thoroughfare but is near one. Therefore, only a few commercial shipping transits would need to adjust their routes slightly to the south of their normal routes. Up to 12 fishermen trawl and up to five lobstermen set pots in the area that the Coast Guard has proposed to establish as the fixed safety and security zone; these fishermen would be excluded from using the area within the fixed safety and security zone for the life of the Project. In addition, commercial fishermen using waters along the proposed LNG carrier routes may experience occasional use conflicts and gear damage. Broadwater would reduce the impact to affected commercial fishermen by providing economic compensation for losses throughout the life of the Project; therefore, the Project would result in a minor impact on commercial fishermen.

The fixed safety and security zone proposed for the FSRU would be approximately 5 miles farther offshore than the areas commonly used by recreational boaters (up to about 3.5 miles from shore), and would not result in a significant impact on recreation. However, the proposed safety and security zone around each LNG carrier would affect recreational boaters, especially in the Race. Recreational vessels traveling across the Race may experience up to a 15-minute delay as an LNG carrier and its proposed safety and security zone passed by. Anchored or drifting vessels would need to temporarily move from areas in the path of an approaching LNG carrier and its associated moving safety and security zone, with a potential time of up to 40 to 60 minutes required from the start of relocation to a return to the original location. However, recreational vessels traveling through the Race would not be significantly affected because they could travel outside of the safety and security zone while remaining in the main channel, use areas outside of the deeper main channel, or use nearby alternative routes.

The number of recreational vessels affected by the moving safety and security zone around the carriers would depend upon the season, day, and time of LNG transit. To minimize impacts, the Coast Guard has indicated that consideration of recreational activity would be a component of transit scheduling. In addition, LNG carriers and the moving safety and security zones around them would be present in the Race for about 2 percent of the year (approximately 182 hours per year).

The primary impact to visual resources would be the presence of the FSRU in the central portion of the Sound. Local visibility data indicate that the FSRU could be visible from some shorelines near the central portion of the Sound on about 80 percent of the days. However, at sea level locations more than about 20 miles from the FSRU, the facility would not be visible; and from locations at an elevation of 40 feet, the FSRU would not be visible from distances beyond about 25 miles. When viewed from the nearest shoreline, the FSRU and a berthed LNG carrier would appear as a small two-dimensional rectangle on the horizon about the size of a small paper clip held at arm's length. The primary visual difference between the FSRU and existing commercial traffic would be its lack of movement.

LNG carriers would appear similar to other large commercial vessels in Long Island Sound and would increase overall commercial vessel traffic in the Sound by about 1 percent. Based on a visual resource analysis conducted by Broadwater in accordance with NYSDEC's procedures, the Project would result in a moderate, long-term impact to visual resources in a limited portion of Long Island Sound and along the associated shorelines. This impact is not expected to change the public value of the viewshed or alter the value of shorefront property or recreation.

We also evaluated whether or not implementation of the Project could result in offshore industrial development of the Sound. We found nothing to validate this concern. It has been over 30 years since

the last energy transfer facility was built in the Sound, and there is little indication that the existence of that facility increased development in the Sound or on shore. Further, there would be little or no economic benefit to clustering industrial activity in the immediate vicinity of the proposed Project. We have concluded that implementation of the Broadwater Project would not stimulate new types of offshore industrial or commercial developments.

The seafloor below the proposed fixed safety and security zone at the FSRU and along the proposed pipeline route is held in public trust by the State of New York. Broadwater applied to the New York State Office of General Services (NYSOGS) to obtain permission to use these areas, and both NYSDEC and NYSDOS are reviewing the application to make recommendations regarding natural resources and to address coastal zone management issues. NYSOGS is required, under the state's coastal management plan, to conduct its own coastal zone consistency review to ensure that the granting of a lease would be consistent with coastal policies. In addition, Broadwater has submitted a Coastal Zone Management Act consistency certification to NYSDOS, and has submitted a supplement to the certification that includes the anticipated coastal zone effects associated with implementing the proposed safety and security measures presented in the Coast Guard's WSR. NYSDOS is currently reviewing Broadwater's documents. We understand that after the final EIS is issued, NYSDOS will determine whether or not the proposed Project would be consistent with the state's Coastal Management Program, the Long Island Sound Coastal Management Plan, and relevant land management programs.

Although LNG carrier operations represent an increased risk to public health and safety, FERC and the Coast Guard consider the potential risk to be very low. The anticipated carrier routes are at least 3 miles from the shoreline, with two exceptions: the closest shorelines to the route are Fishers Island (about 1.4 miles) and Plum Island (about 1.3 miles). LNG carriers would be subject to Coast Guard requirements, including the proposed establishment of a safety and security zone around each incoming and departing carrier, and Coast Guard inspection and enforcement practices.

The types of events most likely to cause a significant release of LNG are ship casualties, such as collisions, allisions, or groundings. To cause a release of LNG, such an incident would require sufficient force to breach the LNG ship's double hull and cargo tanks. During the approximately 44,000 voyages that have been completed since the inception of LNG maritime transportation, only 10 substantial incidents have involved LNG ships, and none of those incidents resulted in the release of LNG due to ruptured cargo tanks. Accidental groundings, collisions with small vessels, and low-speed collisions with large vessels could cause minor ship damage but would not result in a cargo spill due to the protection provided by the double-hull structure, the insulation layer, and the primary cargo tank of an LNG vessel. We do not believe that these types of accidents would result in significant environmental impacts.

It is possible that a release from the FSRU or an LNG carrier could be caused by an intentional act, such as a terrorist attack. Although an intentional breach scenario could result in thermal radiation in the immediate vicinity of the release, such scenarios are typically associated with the desire to inflict damage to major infrastructure and population and commercial centers, rather than an offshore area.

We addressed potential environmental impacts in the unlikely event that an incident involving the FSRU or an LNG carrier released LNG. Because LNG is a cryogenic liquid, the greatest threat to aquatic life from an unignited LNG spill would be thermal stress. Any aquatic life directly contacting the LNG would experience a sudden cold shock that could be lethal, although it is expected that most motile underwater organisms would detect the temperature change and avoid the area. Wildlife on the surface near the release could be surrounded by the vapor cloud and suffer asphyxiation. However, because the LNG would quickly vaporize and disperse, the likely duration of such exposure would be short. Impacts to shoreline habitats and associated wildlife could occur in the unlikely event of an unignited vapor cloud

of natural gas from an LNG release reached land and ignited onshore. Potential damage could involve the combustion of both vegetation and wildlife as the fire burned back toward the location of the release.

In summary, we determined that, with strict adherence to federal and state permit requirements and regulations, and with implementation of Broadwater's proposed mitigation measures and our recommendations, the proposed Project would result in limited adverse impact to the environment.

Cumulative Impacts

We considered a wide variety of projects and activities in the general area that, in concert with the proposed Broadwater Project, could result in cumulative impacts. Of these projects, we more closely evaluated 12 projects in Long Island Sound, including three natural gas pipelines (two existing and one proposed), five existing subsea telecommunications or electric transmission cables, two offshore oil transfer platforms, and two proposed offshore dredged material disposal sites. We determined that while other constructed and proposed projects have the potential to contribute cumulative impacts to water quality, marine biological resources, visual resources, air quality, and marine transportation, only the additive impacts of the Eastchester Expansion Pipeline Project and the future Islander East Pipeline Project could potentially generate significant cumulative impacts in the offshore waters of Long Island Sound, and were therefore analyzed further. Incomplete backfilling along the Eastchester route has resulted in the persistence of a trench along the pipeline route. To minimize similar problems with the proposed Project, we have recommended that Broadwater actively backfill the trench and implement post-construction monitoring to assess success in accordance with plans developed in concert with federal and state resource agencies.

We believe that impacts associated with the Broadwater Project as proposed would be minor, and we have included many recommendations in this EIS to further avoid and minimize the environmental impacts of the Project. Consequently, only a small cumulative effect is anticipated when the impacts of the proposed Project are added to past, present, or reasonably foreseeable future projects in the area.

Alternatives

Coast Guard

The proposed action before the Coast Guard is to consider whether or not to issue Broadwater a Letter of Recommendation that finds the Project Waterway suitable for LNG marine traffic. Alternatives considered by the Coast Guard consisted of the following:

- Issuing a Letter of Recommendation finding that the Project Waterway is suitable without the implementation of additional measures;
- Issuing a Letter of Recommendation finding that the Project Waterway is unsuitable (No-Action Alternative); and
- Issuing a Letter of Recommendation finding that, to make the Project Waterway suitable, additional measures are necessary to responsibly manage risks to navigation safety or maritime security associated with LNG marine traffic.

Issuing a Letter of Recommendation finding the Project Waterway to be suitable for the Project would allow LNG carriers to transit Long Island Sound route to and from the proposed FSRU once operations are commenced. This would result in meeting the energy needs of the target market for the Project. A determination that the Project Waterway is suitable could be rendered with or without additional measures. Based on the assessment of port safety and security in the WSR, issuance of a Letter

of Recommendation without conditions is not considered to be a viable alternative and was not addressed further in this final EIS.

If the Coast Guard were to issue a Letter of Recommendation that finds the Project Waterway unsuitable for LNG marine traffic, the Project Waterway would continue to be used as it is currently, and the environmental impacts associated with issuance of a Letter of Recommendation with specific conditions would be avoided. However, the purpose and need of the Project would not be met, and the region's increasing energy demands would not be met.

FERC

In our assessment of alternatives, we reviewed the following types of alternatives: No-Action and Postponed-Action Alternatives; Alternative Energy Sources; System Alternatives; Combined Alternatives; Alternative LNG Terminal Designs and Locations; Pipeline Route Alternatives; Pipeline Construction Alternatives; Alternative Vaporization Methods; and Alternative Onshore Support Facilities.

With the No-Action and Postponed-Action Alternatives and the Alternative Energy Sources, the projected energy needs for the New York City, Long Island, and Connecticut markets would not be met; this would result in energy supply instability and the persistence of elevated natural gas price and price volatility. In addition, these alternatives would not diversify the sources of or provide storage for natural gas, both of which are part of the purpose and need of the proposed Project.

As part of our evaluation of alternative energy sources, we also evaluated proposed renewable energy projects in New York and Connecticut, including proposed wind and tidal energy projects, and determined that these proposed renewable energy projects would provide a small increase in the energy supply for the region. Federal, state, and local initiatives promoting renewable energy likely will contribute to an increase in the availability of these technologies in the coming years. However, several New York and Connecticut state studies predict that renewable energy sources would offset only a small part of the projected energy demand for the region for the foreseeable future.

We also considered existing, proposed, or planned projects, including six existing pipeline systems; seven proposed pipeline projects; and 20 proposed, planned, or existing LNG terminals between Quebec, Canada and the Delaware River in New Jersey. Although it would be technically feasible to transport natural gas through these systems, none of these alternatives could directly deliver comparable volumes of natural gas to the target markets without substantial system upgrades or extensive offshore construction that would result in greater environmental impacts than those of the proposed Project.

In considering alternative types of LNG terminals and alternative locations, we concluded that an FSRU sited in the central portion of Long Island Sound would be the least environmentally damaging alternative that would still meet the purpose and need of the Project. An onshore LNG facility along Long Island Sound would be closer to populated areas and would likely require dredging and construction of berthing and/or pipeline support facilities in sensitive nearshore waters. A shuttle regasification vessel terminal also would likely result in greater seafloor impacts than those of the proposed Project, and incorporation of storage capabilities to satisfy Project objectives would generally result in impacts that would be at least comparable to impacts associated with storage for the proposed Project.

Broadwater selected the proposed subsea pipeline route to limit impacts while considering the engineering constraints on potential interconnection locations with the IGTS pipeline. We evaluated six alternative pipeline routes. Connecting to the IGTS pipeline as proposed would allow the delivery of LNG to the target markets without additional upgrades to the IGTS system and the associated environmental impacts. Shorter routes to the IGTS pipeline would not provide a substantial

environmental advantage but would increase the length of 24-inch-diameter IGTS pipe that gas from the Project would need to pass through to reach New York City and Long Island. This would reduce the flow-through capacity of gas that could be shipped from the Project as compared to the proposed location of the interconnection or would require additional compression. Construction along the other pipeline route alternatives we considered would result in greater environmental impacts than those of the proposed Project.

Overall, the proposed Project with implementation of the mitigation methods we have recommended would result in fewer environmental impacts than any alternatives considered. This includes consideration of the Project's purpose and need and the environmental impacts associated with the location, design, and construction methods of the alternatives.

Major Conclusions

During our environmental review of the proposed Project, we identified procedures that would avoid, minimize, and mitigate environmental impacts that would result from construction and operation of the Project as proposed by Broadwater. We recommend that these mitigation measures be attached as conditions to any authorization issued by the Commission. If the proposed Project is found to be consistent with the public interest and is constructed and operated in accordance with Broadwater's proposed mitigation methods and the mitigation measures recommended by FERC and Coast Guard, we conclude that it would result in limited adverse environmental impacts. The following are the primary reasons for our decision:

- The FSRU would be located at least 9 miles from the nearest shoreline and would be distant from population centers and sensitive nearshore marine biological resources;
- The proposed Project would result in fewer environmental impacts than any alternatives considered, and many alternatives could not meet the proposed purpose and need of the Project;
- The Coast Guard has made a preliminary determination that, if specific risk mitigation conditions are implemented, the Project Waterway would be suitable for use by LNG carriers to and from the proposed FSRU;
- The Coast Guard would establish and enforce a Regulated Navigation Area to include safety and security zones around the FSRU and the LNG carriers that would minimize the potential for conflict between the proposed Project and current and future usage of the Project Waterway by commercial, recreational, and government marine vessels;
- Design and operation of the proposed Project would include the safety features and procedures required by the Commission, the Coast Guard, and the certifying entity;
- Broadwater would develop and implement an Emergency Response Plan that would include involvement by state and local agencies and municipalities; include a Cost-Sharing Plan; and meet the requirements of the Commission, the Coast Guard, and other federal agencies;
- The navigation controls and marine safety and security measures that would be incorporated into the Project would result in a remote likelihood of an LNG spill and would keep the potential risk to health and safety at an acceptable level;
- As proposed by Broadwater, construction and operation of the proposed Project would result in a minor environmental impact, and impacts to resources would be avoided or further minimized with incorporation of our recommendations;

- Broadwater would obtain all federal permits and authorizations and would follow the applicable permitting requirements of the State of New York; and
- The environmental inspection and mitigation monitoring program would ensure compliance with the mitigation measures that would become conditions to any authorizations of the proposed Project issued by the Commission.