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Coast Guard Report on the Broadwater Energy LNG Proposal

The Coast Guard Captain of the Port for Long Island Sound has completed an assessment of the safety and security issues for the Broadwater Liquefied Natural Gas (LNG) facility proposed for Long Island Sound. The Coast Guard position is to neither support nor oppose this proposal but, rather, to provide an objective analysis of the navigational safety and maritime security issues associated with the Broadwater Energy LNG proposal. As the lead federal agency responsible for waterway safety and maritime security, the Coast Guard's recommendation is based solely on an objective assessment of whether the waterway is suitable with respect to navigation safety and maritime security for LNG marine traffic and the operation of the proposed facility. This assessment is based on the Coast Guard's statutory authority provided by the Ports and Waterways Safety Act (33 U.S.C. §§ 1221 *et seq.*) and the Maritime Transportation Security Act of 2002.

The Federal Energy Regulatory Commission (FERC) is the lead federal agency responsible for determining whether or not the Broadwater proposal will be licensed. As such, this Coast Guard assessment is not an approval or disapproval of the Broadwater proposal. There are many other issues beyond the scope of this assessment that FERC will address through the development of an Environmental Impact Statement (EIS), required under the National Environmental Policy Act (NEPA). FERC's review process and contact information are available at the FERC website, http://www.ferc.gov/for-citizens/for-citizens.asp.

The Coast Guard will provide this assessment (called the Waterway Suitability Report) to FERC for inclusion in the draft EIS. This report will also be posted on the Sector Long Island Sound public information web page at www.uscg.mil/d1/units/seclis/public.html. Certain portions of the report are restricted as Sensitive Security Information (SSI), governed under Title 49, Code of Federal Regulations (CFR) 1520.

This assessment and report took over a year to complete and is based on an analytic and objective assessment of potential risks to navigation safety and maritime security associated with the proposed Broadwater Energy project. The assessment included input from a Harbor Safety Working Group comprised of approximately 30 representatives of commercial, recreational and government waterway users as well as state and local agencies with responsibilities related to waterway safety. It also included input from a Sub Committee of the Long Island Sound Area Maritime Security Committee that included approximately 20 representatives of federal, state and local agencies with responsibilities related to maritime security. Extensive public input was also received through written comments that were submitted to the Coast Guard's docket for this project and during public scoping meetings that were held with FERC.

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Background, key points, and conclusions of the report are summarized in this letter. Detailed discussion and analysis is contained in the text of the full Waterway Suitability Report.

Background:

- Broadwater Energy is proposing to build a floating storage and regasification unit (FSRU) in Long Island Sound. The FSRU would measure approximately 1,215 feet in length, 200 feet in width, and would rise approximately 80 feet above the water line to the deck. The FSRU's draft would be approximately 40 feet. The entire cargo containment system of the FSRU is protected by a double hull.

- The FSRU itself would have 8 LNG tanks, each having an approximate volume of 44,850 m^3, for a total net storage capacity of 350,000 m^3. The LNG would be maintained at a temperature of minus 260° F and at a normal operating pressure of 1-3 pounds per square inch (psi), closely approximating atmospheric pressure. No mechanical means of refrigeration would be required.

- The FSRU would be secured via a Yoke Mooring System (YMS) attached to a stationary tower structure secured to the seabed, housing a sendout pipeline. The YMS is designed to allow the FSRU to pivot or weathervane around the tower. The FSRU would have a single berth on its starboard side to accommodate LNG tankers for off-loading LNG.

- As proposed, LNG would be delivered to the FSRU by 2 to 3 LNG tankers per week with cargo capacities ranging from 125,000 m^3 to 250,000 m^3.

- The location where Broadwater Energy has proposed to construct and operate the FSRU is in state waters. Therefore, the lead federal agency for this project is the Federal Energy and Regulatory Commission (FERC). As the lead federal agency, FERC is responsible for making the decision whether to license the project. In accordance with an interagency agreement, the Coast Guard is a cooperating agency and is responsible for providing input regarding navigation safety and maritime security to FERC as part of the environmental review process required by the National Environmental Policy Act (NEPA, *see* 42 U.S.C. §§ 4321 - 4370).

- The LNG carriers for the proposed project will transit waters under the jurisdiction of the state of New York, and in some cases may transit the waters under the jurisdiction of the states of Connecticut and Rhode Island.

Key Points:

- Long Island Sound is a mixed use waterway. Recreational, commercial, naval and fishing boats share this estuary of national significance.
- Typically 450 foreign flagged vessels per year call on ports in Long Island Sound. In addition, approximately 4000-7000 domestic commercial vessels transit Long Island Sound each year. The addition of the proposed LNG tankers transiting to the FSRU

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would increase foreign flagged vessel traffic volume by 20-30%. The overall increase of commercial vessel traffic in Long Island Sound would be less than 1%.

- There are currently no known, credible threats against the proposed Broadwater Energy facility. However, it should be noted that the threat environment changes and that some threats may be unknown. If the project is approved by FERC, periodic threat assessments must be conducted to ensure the security measures in place are appropriate.
- Over the approximately 45 years since the shipment of LNG began, more the 33,000 LNG carrier voyages have taken place. Eight marine incidents worldwide have resulted in LNG spills. No cargo fires on LNG carriers have occurred.
- The proposed location of the FSRU (approximately 10.2 miles from Connecticut and 9.2 miles from New York) has a number of significant safety and security benefits, including reducing threat and public safety consequences since it would be remote from population centers, and protection from open ocean sea conditions. However, the remote location also creates some challenges since it would require that a law enforcement presence be projected to the center of the Long Island Sound.
- The principle characteristic of the consequences of a large open air release of LNG due to an accident or an attack is a fire, not an explosion. LNG fires are very intense and are of short duration, e.g., on the order of an hour. The analysis of consequences was based on the findings in the Sandia National Laboratories Report SAND 2004-6258: Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill over water. The Sandia Report can be found at http://www.fossil.energy.gov/programs/oilgas/storage/lng/sandia_lng_1204.pdf#search=%22Sandia%20LNG%20Report%22.
- None of the hazard zones identified in the Sandia Report (Zone 1, Zone 2, or Zone 3) around the FSRU would impact any population centers due to their distance from land. Neither hazard Zone 1 nor Zone 2 for the next generation LNG tanker would impact land along the proposed transit route. Hazard Zone 3 (unignited vapor cloud) could impact land along limited portions of the proposed transit route.
- The purpose of a safety/security zone is two-fold: to reduce risks to the public by limiting access to the areas of highest consequences should an LNG fire occur; and, to provide a security perimeter to protect the FSRU and LNG tankers.
- The proposed safety/security zone around the FSRU is a circle centered on the mooring tower with a radius of 1210 yards (equal to an area of 1.48 square miles). Long Island Sound is approximately 1320 square miles (an area that is by comparison nearly the size of Long Island, which is 1379 square miles). The area covered by the proposed safety/security zone is approximately 0.12% of the total area of Long Island Sound.
- The proposed safety/security zone around the LNG tanker while in transit in Long Island Sound would extend 2 nautical miles in front of, 1 nautical mile behind, and 750 yards to either side of the LNG tanker. The safety/security zone would move with the LNG

tanker. At a typical LNG tanker speed of 12 knots, it would take the entire zone approximately 15 minutes to pass a given point.

- The Race is a critical waterway connecting Block Island Sound and Long Island Sound used for national defense, commerce, and recreation. The impacts on other waterway users of a moving safety and security zone, if implemented, around LNG tankers could be managed.
- Additional resources would be needed to mitigate safety and security risks associated with the Broadwater LNG project, if approved. The most probable security regime would consist of a mix of federal (including Coast Guard), state, and local law enforcement. If state and local law enforcement agencies are involved, they would also require additional resources. In the event that state and local law enforcement agencies are involved, these agencies and Broadwater Energy would be responsible for brokering a cost sharing agreement.
- Additional marine firefighting resources would be required to mitigate fire risks associated with the Broadwater LNG project, if approved. Existing marine firefighting capability in Long Island Sound is inadequate.

Conclusion of the Coast Guard Waterway Suitability Report:

Based on Coast Guard policy guidance, the Captain of the Port can generally make one of three conclusions regarding the suitability of a waterway to support LNG marine traffic. The first is that the waterway is suitable without the implementation of additional measures. The second is that the waterway is unsuitable. The third is that to make the waterway suitable, additional measures are necessary to responsibly manage risks to navigation safety or maritime security associated with LNG marine traffic and the operation of the FSRU.

Based on the results of this assessment of potential risks to navigation safety and maritime security associated with Broadwater Energy's proposal, the Coast Guard has determined that to make the waters of Block Island Sound and Long Island Sound suitable for LNG vessel traffic and the operation of the proposed FSRU, additional measures would be necessary to responsibly manage the safety and security risks associated with the proposed project.

The Waterway Suitability Report includes a series of risk management strategies that the Coast Guard has determined would be necessary as additional measures to responsibly manage risks to navigation safety and security risks associated with the proposed Broadwater LNG project. These management strategies include both measures designed to reduce risk by reducing the potential that an accident or terrorist attack may be attempted as well as measures designed to reduce the potential consequences if there was a large release of LNG from either the proposed FSRU or an LNG tanker.

Next Steps:

FERC will issue a draft Environmental Impact Statement (DEIS) that includes the Coast Guard's Waterway Suitability Report. FERC's DEIS will address the full spectrum of environmental impacts

associated with the proposed project. Following public comment, which may include a series of public meetings, FERC will issue a final EIS (FEIS). Based on the FEIS, FERC will make a licensing decision. Questions regarding these actions should be directed to FERC at 1-866-208-3372 or Email: customer@ferc.gov.

Following the issuance of the FEIS, the Coast Guard Captain of the Port (COTP) Long Island Sound will issue a Letter of Recommendation (LOR) in accordance with 33 C.F.R. § 127.009 to Broadwater Energy and the appropriate federal, state and local agencies. The LOR will be an official determination regarding the suitability or unsuitability of Long Island Sound with respect to navigation safety and security to support the proposed FSRU and associated LNG tanker traffic. The LOR, which will be based on this Waterway Suitability Report, will not be issued until after the NEPA process has been completed.

If the proposed project is licensed by FERC and constructed by Broadwater Energy, the Coast Guard will have continuing involvement in the project, including review and approval of security plans, active participation in the emergency response planning process required the Energy Policy Act (EPACT) of 2005, implementation and overall coordination of enforcement of safety/security zones, and oversight of appropriate navigation standards.

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