

# THE SAFETY AND SECURITY OF LIQUEFIED NATURAL GAS TERMINALS

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(110-37)

## FIELD HEARING

BEFORE THE  
SUBCOMMITTEE ON  
COAST GUARD AND MARITIME TRANSPORTATION  
OF THE  
COMMITTEE ON  
TRANSPORTATION AND  
INFRASTRUCTURE  
HOUSE OF REPRESENTATIVES

ONE HUNDRED TENTH CONGRESS

FIRST SESSION

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MAY 7, 2007 (Farmingville, NY)  
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**U.S. House of Representatives**  
**Committee on Transportation and Infrastructure**  
Washington, DC 20515

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May 4, 2007

James W. Coon II, Republican Chief of Staff

**SUMMARY OF SUBJECT MATTER**

**TO:** Members of the Subcommittee on Coast Guard and Maritime Transportation  
**FROM:** Subcommittee on Coast Guard & Maritime Transportation Staff  
**SUBJECT:** Field hearing on "The Safety and Security of Liquefied Natural Gas (LNG) Terminals"

**PURPOSE OF THE HEARING**

On May 7, 2007, at 10:00 a.m., in the Brookhaven Auditorium in Farmingville, New York, the Subcommittee will meet to examine the safety and security of Liquefied Natural Gas ("LNG") terminals and their impact on port operations. The hearing will also examine the proposed Broadwater floating LNG terminal in Long Island Sound.

**BACKGROUND**

**Shipping Liquefied Natural Gas (LNG)**

When natural gas is cooled to a temperature of less than 260 degrees Fahrenheit, it becomes a liquid. As a liquid, natural gas occupies only 1/600<sup>th</sup> of the volume it occupies as a gas – so a larger quantity can be stored in a smaller space.

LNG is shipped as a liquid. LNG shipping began in 1959. Historically, less than one percent of the total amount of natural gas utilized in the United States was imported – because domestic production capacities yielded cheap gas in large quantities. However, as the use of natural gas in the United States has increased (due to low prices in the 1980s and 1990s), domestic production capacity has not kept pace with demand and prices have risen – making imported gas competitive with domestically produced gas.

On-Shore Facilities

By definition, a facility is considered to be “on-shore” if it is located within three miles of shore (that is, in the waters controlled by coastal states), except off Texas and the West coast of Florida where a facility is considered “on shore” if it is within three leagues (approximately nine miles).

At the present time, there are only five active, on-shore LNG import facilities in the United States:

- Everett, Massachusetts
- Cove Point, Maryland
- Lake Charles, Louisiana
- Elba Island, Georgia
- Penuelas, Puerto Rico

In some cases, these LNG terminals are not physically on land. For instance, at Cove Point, Maryland, ships dock at an LNG terminal pier that is 1¼ miles from shore.

The process governing the siting of off-shore facilities involves different agencies from the process pertaining to on-shore facilities. This memorandum examines the siting of on-shore facilities.

Agencies and Entities Regulating LNG Terminal Sitings and Operations

A new on-shore, LNG facility must obtain approximately 100 permits and approvals from a variety of Federal, state, and local agencies before the project can begin construction. This memorandum provides a brief overview of some of the main regulatory requirements governing the siting of on-shore LNG facilities.

In general terms, the U.S. Department of Transportation (“DOT”) is responsible for setting safety standards for on-shore LNG terminals (due to its regulatory authority over pipelines) – including the siting, construction, and operation of these facilities. However, DOT does not approve or deny specific siting applications – that authority resides with the Federal Energy Regulatory Commission (“FERC”).

Federal regulations do not contain requirements for remote siting of LNG terminals. However, the Pipeline Safety Act requires DOT to consider the need to encourage the remote siting of LNG terminals. The Governmental Accountability Office (“GAO”) testified to Congress in 1979 that the public could best be protected by placing LNG terminals away from population centers.

FERC enforces the standards set by DOT – but also has the authority, pursuant to a memorandum of understanding between FERC and DOT, to set more stringent standards for facilities when these are warranted.

The Coast Guard participates in reviewing applications as a cooperating agency. Its specific role is to conduct a Waterway Suitability Assessment (“WSA”), which assesses the potential impact

of an LNG terminal on existing maritime operations in the vicinity of the proposed terminal as well as the security risks that the proposed site may pose. The WSA also evaluates the potential thermal effects of a pool fire that could occur at a terminal site.

The development of the WSA runs concomitantly with the assessments conducted by FERC, including development of an Environmental Impact Statement. Upon receipt of a WSA, the Coast Guard submits it to review by a committee of stakeholders from the port at which the terminal is proposed to be located and may even conduct public meetings to solicit public comments on the WSA. Upon conclusion of the review, the Coast Guard reaches a preliminary determination about the results of the WSA and communicates its findings to FERC in a document called the Waterway Suitability Report (“WSR”).

The U.S. Army Corps of Engineers maintains its responsibility for any dredging required to provide suitable access channels needed by the terminal.

Other agencies are involved in specific aspects of the regulation of issues associated with terminal siting, including the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce (review and consultation under Endangered Species Act), the U.S. Department of the Interior (review and consultation under Endangered Species Act), and the Environmental Protection Agency (permitting under the Clean Air Act, processing wastewater permits, etc.).

The authority to approve the siting of a facility rests solely with the Federal Government for on-shore facilities. In contrast, under the Deepwater Port Act, the Governor may veto a project built beyond State waters. States also have the authority to regulate issues pertaining to coastal zone management, environmental control, and certain other matters for on-shore facilities.

#### Safety Concerns Surrounding On-Shore LNG Terminals

Several safety concerns regarding on-shore LNG terminals are discussed below.

**Safety Exclusion Zones:** Federal safety regulations require LNG terminals to be surrounded by “exclusion zones” designed to protect neighboring sites from fires and/or flammable cloud vapors. Critics argue that current regulations produce exclusion zones that are too small – and that siting plans may not adequately anticipate the results of terrorist acts or other accidents. A report recently released by GAO examined six studies on the potential effect of a fire resulting from an LNG spill and found that they produced varying results – in large part because there is a lack of data on large spills from actual events and because the various studies utilized different modeling assumptions.

**Safety Hazards in the Marine Environment:** There are several concerns pertaining to potential LNG spills in water. First, if a spill occurs near a source of ignition, the LNG will burn, even if the spill is on water. As the LNG spreads across the water, the LNG will continue to burn creating what is known as a “pool fire”. Pool fires cannot be contained and will burn until all LNG is consumed in the fire. Further, such fires burn hotter than regular gas fires – and may emit thermal radiation that could burn people nearby. Second, LNG spilled on water is theoretically capable of re-gasifying almost instantly – creating a vapor cloud that may also explode if it finds a



source of ignition. Importantly, however, unlike gas, LNG dissipates completely and leaves no residue – so environmental damage will result only from the fires associated with LNG emissions.

#### Role of the Coast Guard in Securing LNG Tankers

LNG tankers in use today are double-hulled. The Coast Guard indicates that LNG tankers have carried more than 40,000 LNG shipments since international shipping began in 1959 and there has never been a breach of a ship's cargo tanks or a major LNG spill. The Coast Guard further reports that there have been approximately 30 LNG tanker safety incidents (including leaks as well as groundings and collisions) through the year 2002. Of these incidents, 12 involved small spills but none ignited.

Currently, there are more than 200 LNG tankers in operation and approximately 100 additional tankers are under construction. None of these tankers fly the flag of the United States.

LNG tankers calling on the United States are required to submit detailed vessel plans to the Coast Guard's Marine Safety Center ("MSC") before they may enter United States waters. The MSC conducts on-site verifications to ensure that the tankers meet applicable construction standards and then issues a Certificate of Compliance valid for two years.

Like all ships calling on the United States, LNG tankers are required to provide notice of their impending arrival 96 hours before reaching a U.S. port. When an LNG tanker is transiting a port or the approaches to a port, the Coast Guard escorts the tanker and enforces special security zones around the vessel to prevent other vessels from approaching it. The Coast Guard also reports that it will board LNG vessels at-sea prior to their arrival.

#### Safety History of Existing LNG Terminals

In 1944, a storage tank that was not outfitted with an impoundment dike failed at an LNG terminal at Cleveland, Ohio, resulting in a spill and subsequent explosion that killed 128 people. In January 2004, an accident at a terminal in Algeria killed more than 100 people.

In 1979, an accident at the Cove Point LNG facility in Maryland resulted in several fatalities and the terminal ceased operations until recent years. Cove Point is a unique terminal because ships dock to a pier located 1¼ miles off-shore. The terminal is then connected to shore by a tunnel constructed using rectangular blocks sunk directly into the water. These tunnels include electrical conduits. The accident occurred when gas leaked on the site and was ignited by a spark. Regulatory changes have since been made to ensure the safety of facilities of similar design.

#### Increased Interest in Developing LNG Terminals

There are approximately 40 LNG terminal projects that are in some phase of seeking permits from FERC (for on-shore sitings) or from the Coast Guard and the Maritime Administration (for off-shore sitings). The majority of the applications are for on-shore facilities. Recent interest in building LNG terminals arises not only from the rising cost of natural gas but also

from recent statutory and regulatory changes intended to streamline the permitting process for such facilities.

### **Proposed Broadwater LNG Terminal in Long Island**

Broadwater Energy LLC, which includes Broadwater Pipeline LLC, is a joint venture of TransCanada PipeLine and Shell US Gas and Power LLC. Broadwater Energy is proposing to construct and operate a permanently moored LNG import, storage, and re-gasification facility to be located in Long Island Sound and known as “Broadwater”.

#### **Overview of the Proposed Broadwater Terminal**

Broadwater would be located near the middle of Long Island Sound approximately nine miles from the shore of Long Island and 11 miles from the shore of Connecticut. Long Island Sound covers 844,800 acres; the proposed Broadwater terminal would be located on fewer than five acres but would require a security zone likely to extend for approximately 1,000 acres.

The Broadwater terminal is designed to receive, store, and re-gasify one billion cubic feet of LNG per day – enough LNG to generate approximately 5,800 megawatts of electricity or approximately 50 percent of the gas-fired electricity generated in New York City, Long Island, and southern Connecticut. Broadwater Energy estimates that approximately 50 percent of the natural gas from the proposed terminal would be transported to New York City, 25 percent to 30 percent would be transported to Long Island, and the remaining gas would serve customers in Connecticut. According to documents produced by Broadwater, these supplies would produce household energy cost savings of approximately \$300 per year in New York, Long Island, and Connecticut.

The proposed Broadwater terminal will consist of a Floating Storage and Re-gasification Unit (“FSRU”) approximately 1,215-feet long, 200-feet wide, and rising 80 feet above the water line; the FSRU will draw approximately 40 feet of water and will float in water 90-feet deep. The FSRU, which will be shaped roughly like a maritime vessel, will have eight LNG tanks, each capable of holding approximately 44,850 cubic meters of LNG. The cargo containment system will be protected by a double hull. The terminal will receive shipments of LNG from LNG tanker ships approximately two to three times per week.

The FSRU will be held in place using a yoke mooring system attached to a stationary tower secured to the seafloor by a four-legged support structure, which will also connect the FSRU to the pipeline through which natural gas will be transported away from the terminal. The terminal design, which is expected to have a lifespan of 30 years or more, has been specially engineered to survive strong wind storms and high wave conditions.

The Broadwater terminal will link to the existing Iroquois pipeline through a pipeline 30 inches in diameter laid beneath the seafloor and connecting to a subsea interconnection approximately 22 miles from the FSRU mooring location.

The construction of the mooring facility and the laying of the associated pipeline will cause some disruption of bottom sediments on the seafloor. The planned pipeline installation method involves the use of a subsea plow to lower the pipeline to a depth of five feet for the first two miles

of pipeline and a depth of three feet for the remaining length of the pipeline. Broadwater reports that all but 10 percent of the trench created by the subsea plow will be allowed to backfill naturally through sediment deposition.

Assuming that the proposed terminal is approved by FERC, construction of the Broadwater facility is proposed to proceed in two phases. The first phase would include the installation of the subsea pipeline between October 2009 and April 2010. The second phase of the project would include the installation of the yoke mooring system, the hookup of the FSRU, and the connection of all project components between September and December 2010.

#### Other Terminal Locations Were Evaluated

Broadwater LLC reports that a number of other potential terminal locations were evaluated, including a variety of on-shore sites. On-water locations were also examined in the Atlantic Ocean and the Block Island Sound, but these sites were rejected because weather conditions would have created numerous periods when tankers could not have unloaded LNG at these sites. These sites would also have required longer pipelines to reach the Iroquois pipeline.

The site in Long Island Sound was chosen because it was a centralized site in the Sound that was protected from the open ocean, maximized the distance from shore (therefore lessening potential impacts on populated areas), and reduced interference with recreational boating and commercial activities that are prevalent in the western portion of the Sound and along the Sound's shorelines.

#### Waterway Suitability Assessment/Security Assessment

The Coast Guard Captain of the Port for Long Island Sound submitted the WSR on September 21, 2006, following completion of the WSA. The Coast Guard did not express support for or opposition to the proposed terminal but did identify safety and security issues that must be addressed as part of the development of the terminal if the project is approved by FERC.

**Importantly, however, the Coast Guard indicated in the WSR that "Based on current levels of mission activity, Coast Guard Sector Long Island Sound currently does not have the resources required to implement the measures that have been identified as being necessary to effectively manage the potential risk to navigation safety and maritime security associated with the Broadwater Energy proposal."** The Coast Guard indicates that, to provide the resources to implement the necessary security measures, it would need to either curtail current activities or seek additional resources through the budget process. These measures may be carried out by the project operator through funding of State or local marine patrol operations.

The WSR identifies specific risk management strategies to manage the risks associated with the Broadwater terminal.

***Security of the Proposed Broadwater Terminal:*** According to the Coast Guard's WSR for the Broadwater terminal, there are "currently no known, credible threats against the proposed Broadwater Energy facility." However, the Coast Guard indicated that periodic threat assessments would need to be conducted to assess changing threat scenarios and ensure that adequate security measures are in place.

The Coast Guard also indicates that the relatively remote location proposed for the terminal (in the middle of Long Island Sound) will require the projection of law enforcement capacity to that location. The Coast Guard indicates that the probable security regime would consist of a mix of Coast Guard and state and local law enforcement units. According to the WSR, State and local law enforcement units will require additional personnel, training, and equipment to provide security to the Broadwater terminal – and the Coast Guard indicates that Broadwater would be responsible for brokering a cost-sharing arrangement to cover the costs that would accrue to state and local law enforcement to meet these needs.

Further, the Coast Guard indicates that existing marine firefighting capabilities in Long Island Sound are inadequate and must be enhanced before the Broadwater terminal becomes operational.

***Security of LNG Tankers in Long Island Sound:*** The anticipated LNG transit routes to the proposed Broadwater terminal are at least three miles from the shoreline at all locations except in the vicinity of Fishers Island and Plum Island, where the shoreline is between 1.1 and 1.3 miles from the proposed transit routes. The Coast Guard indicates that the security/safety zone around LNG tankers transiting Long Island Sound would extend two nautical miles in front of, one nautical mile behind, and 750 yards to either side of the LNG tanker. This zone would move with the tanker. Assuming a tanker is traveling at a speed of 12 knots, it would require 15 minutes for the zone to clear any one specific point. Vessels that are anchored or drifting in the security zone would need to leave the area through which the zone would pass. Recreational vessels could travel outside of the security zone and still remain within the Sound. The Coast Guard has indicated that considerations of recreational use would factor into the scheduling of LNG tanker transits.

***Vessel Traffic in the Sound:*** The Coast Guard reports that between 2003 and 2005, there was an average of 462 foreign flagged vessels call on ports in Long Island Sound on an annual basis while 4,000 to 7,000 domestic commercial vessels transit the Sound. While the introduction of LNG tankers would increase the traffic of foreign flagged vessels by 20 to 30 percent, these tankers would increase the total amount of commercial vessel traffic in the Sound by less than one percent. In addition, there are several commercial ferry systems operating between Connecticut, Rhode Island, and Long Island that would cross the transit route that would be followed by an LNG tanker.

Draft Environmental Impact Statement (DEIS)

FERC issued the DEIS for the Broadwater terminal on November 17, 2006. The DEIS concludes that “approval of the proposed Project with appropriate mitigating measures as recommended, would have limited adverse environmental impacts.” Further, the DEIS concludes that this proposed location results in fewer environmental impacts than any alternatives considered as part of this assessment.

FERC is expected to issue the final environmental impact statement for the Broadwater facility sometime during the summer of 2007. Decisions on additional pending applications for permits related to the proposed construction of the facility are anticipated in the mid- to late-2007 time period.

WITNESSES

PANEL I

**The Honorable Steve Levy**  
County Executive  
Suffolk County, New York

**The Honorable Brian Foley**  
Supervisor, Town of Brookhaven  
Brookhaven, New York

**The Honorable William E. McGintee**  
Supervisor, Town of East Hampton  
East Hampton, New York

**The Honorable Kevin McCarrick**  
Councilman, Town of Brookhaven  
Brookhaven, New York

**The Honorable Marc Alessi**  
New York State Assemblyman  
Wading River, New York

PANEL II

**Captain Peter Boynton**  
Captain of the Port – Long Island Sound  
United States Coast Guard

**Captain Mark O'Malley**  
Chief, Ports and Facilities Activities  
United States Coast Guard

**Mark Robinson**  
Director, Office of Energy Projects  
Federal Energy Regulatory Commission

**Mark Gaffigan**  
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## SAFETY AND SECURITY OF LIQUEFIED NATURAL GAS TERMINALS

Monday, May 7, 2007

HOUSE OF REPRESENTATIVES,  
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,  
SUBCOMMITTEE ON COAST GUARD AND MARITIME  
TRANSPORTATION,  
*Farmingville, NY.*

The subcommittee met, pursuant to call, at 10 a.m., at the Town of Brookhaven Auditorium, One Independence Hill, Farmingville, New York, Hon. Tim Bishop presiding.

Also Present: Representative DeLauro.

Mr. BISHOP. The hearing will come to order. Good morning, all of you. Welcome to this field hearing on the Subcommittee on Coast Guard and Maritime Transportation. My name is Tim Bishop. I have the honor of the representing New York Congressional District One in Congress. I am joined this morning by Congresswoman DeLauro from Connecticut.

I wish to apologize for Mr. Cummings who called early this morning to tell us that he's quite ill and will not be able to be with us. And Representative LaTourette, the ranking member of the committee, learned late last week that he would be unable to attend this hearing as well.

Before we begin I ask unanimous consent that Congresswoman DeLauro be allowed to join the subcommittee for today and participate in this hearing. Without objection, so ordered.

I also ask that all members have five legislative days in which to revise and extend their remarks. Without objection, so ordered.

I want to thank Chairman Cummings for agreeing to this field hearing. His leadership and commitment to the issues that we will be discussing today have been essential to this committee's ability to perform its various responsibilities. I would also like to thank my distinguished colleague and friend from Connecticut, Congresswoman DeLauro, for coming over the Sound to participate in today's hearing.

I would also like to extend my gratitude to Brian Foley, the supervisor of the Town of Brookhaven, and his colleagues on the Brookhaven Town Board for serving as our hosts for today's hearing.

And I would also like to thank all of the panelists who will be participating in today's hearing.

For the record, I oppose the Broadwater proposal to place the liquefied natural gas terminal in the middle of Long Island Sound. The vast majority of those I represent in the first Congressional

District of New York are opposed to the Broadwater proposal. Virtually every elected official in Suffolk County is opposed to Broadwater.

Practically all of us, our opposition is rooted in two areas of concern; environmental impacts and safety and security. The environmental concerns are self-evident and have been well chronicled by the various government agencies, environmental groups, and academic studies.

Among government agencies, serious concerns have been raised by the New York Department of Environmental Conservation, National Marine Fishery Service, United States Department of the Interior, United States Environmental Protection Agency, and the U.S. Army Corps of Engineers.

However, environmental concerns are not the focus of this hearing. This hearing will focus on the multiple safety and security concerns presented by the Broadwater proposal as well as the cumulative impact to the approximately 40 other proposed LNG terminals nationwide.

More specifically, this hearing will focus on the capacity of the United States Coast Guard to ensure the safe operation of the Floating Storing Regasification Unit and the delivery of LNG to FSRU, and to do so while still maintaining its core functions of homeland security, rescue and recovery, drug interdiction, border protections, among others.

It is my hope that this hearing will provide much more information than is currently available on the safety and security challenges associated with dozens of new LNG terminals.

What do we know thus far?

We have the Coast Guard Waterways Suitability Report which states that Broadwater will not impair the waterway assuming that the Guard is provided the resources necessary to, quote, "implement the measures that have been identified as being necessary to effectively manage the potential risk to navigation safety and maritime security associated with the Broadwater Energy proposal," close quotes.

However, with these requirements, there have been no estimates of cost. In fact, the Coast Guard has said it will not determine the true costs of protecting the facility until after the FERC approves the terminal. Thus, the scenario exists of one government agency giving the green light to a massive facility with enormous security implications prior to another government agency saying it has the resources required to secure it.

What else do we know?

A CRS report, using the existing Everett Terminal in Boston, conservatively estimates a security cost of \$40,000 per tanker shipment of LNG, and this number would be combined with expected levels of delivery, will amount to annual security costs of \$24 million in 2008 growing to \$120 million in 2030. And this does not consider costs to local and State security agencies. Who will pay these costs?

There is also the recent GAO report that raises more questions than it answers regarding the consequences of an accident or terrorist attack. This report highlights that we do not have adequate data regarding the consequences of catastrophic failure. While



there is more information forthcoming from both the GAO and the Department of Energy, it is possible that the Broadwater project will be approved before all of this information comes to light.

We also know that there are no U.S.-flagged vessels delivering LNG anywhere in the world. This means that the Coast Guard has no authority over crews, their training, or their experience as they would if the vessels were U.S. flagged and are operating at senior levels by U.S. merchant mariners.

Thus we have a situation that these massive tankers, with four times the energy potential of the bomb dropped on Hiroshima, are crewed by people whose background, training, and expertise are completely unknown to the Coast Guard.

We also know that Coast Guard resources are currently stretched thin. This committee is investigating the Deepwater fiasco which has taken significant other Coast Guard assets off line. We also know given this situation that a Coast Guard request for additional assets to the Congress could not possibly come at a worse time.

The important role of an oversight committee is not simply the answers it receives but asking the right questions. The question today is not does Long Island need more natural gas? The answer to that is yes. My question is, is Broadwater the most efficient, safest way to bring more natural gas to Long Island?

There are alternative solutions that would not require the same level of security or pose the same risks to the environment as Broadwater.

In the context of this committee's jurisdiction, the question we must ask is: At what price can the Coast Guard secure Broadwater? What resources will it require? What are the costs of those resources? Who is bearing those costs? What existing functions will suffer because the Coast Guard must shift resources to secure Broadwater? And how will the Coast Guard find the resources for 40 other LNG terminals?

The responsibility of this subcommittee is to ask these tough questions, get answers, and make informed choices that are in the best interest of protecting our communities.

I thank you and I look forward to hearing from our panelists.

Congresswoman DeLauro, would you like to make an opening statement.

Ms. DELAURO. Yes.

Mr. BISHOP. Congresswoman DeLauro now has five minutes.

Ms. DELAURO. Thank you and good morning to all. I'm delighted to be here and to be invited to be part of this effort and to be, if you will, accepted as an, on a nonpermanent basis, to be a part of this subcommittee. By the way, I would like to say that this is just a beautiful facility, Congressman Bishop, and I love the art work, and it's a beautiful day and I came across the Sound this morning along with the Coast Guard and it was a beautiful, beautiful trip.

I, too, would like to say a thank you to Chairman Cummings who isn't here but I wanted to thank him for his work with the Subcommittee on Coast Guard and Maritime Transportation. He is from Baltimore where one LNG terminal already exists and another has been proposed. He understands the issues that surround these facilities and we all look forward to our continued conversations with him and drawing on his experiences.

I want to thank, very, very sincerely, thank my colleague Congressman Tim Bishop. No one in the Congress is more committed to protecting the Long Island Sound than Tim Bishop. Congressman Bishop's tireless efforts have shown his keen understanding of the Sound's important role in our lives and understands that we must urgently come together to protect it.

We have come together today to discuss an issue of local and national importance, the studying of LNG terminals. We will address the specific example of the Broadwater proposal in the middle of Long Island Sound, one example which has many implications for the entire country. The issues it raises include energy prices, our reliance on foreign energy, because LNG is indeed a foreign fuel, security, environmental hazards, Coast Guard resources, and the impact on local first responders.

With 28 million people living within 50 miles of its shores, Long Island Sound contributes more than \$5 billion annually to our economy. It is the life blood providing environmental, recreational, and economic opportunity for many of our communities.

And as you may know, Long Island Sound is held to the citizens of Connecticut and New York under the Public Trust Doctrine. Over the years, both States have taken this responsibility seriously and acted to preserve and protect the Sound and its habitat for the benefit of its surrounding communities.

I believe that this project violates that public trust. Its approval would most certainly set the precedent for further industrialization of the Sound, as we have seen over the last several years with the approval of many projects each larger than the last.

Broadwater is just across the Connecticut New York border in the Sound. It would effect our State as much as it would effect New York. Yet Connecticut has no formal role in the decision to put this facility in the Sound. Connecticut should have a seat at this table with this process. If there are going to be tankers in Connecticut's waters, Connecticut ought to have a say in this process.

I believe that Connecticut has a unique role in this discussion and a unique perspective to offer the debate. If Broadwater became a reality, it would install a floating vessel roughly the size of the Queen Mary II. I've been on the Queen Mary II. It gives you some sense of the enormity of this project.

Ten point two miles off the Connecticut coast, nine miles off the Long Island Coast. The proposal also calls for the installation of a 25 five mile pipeline right in the middle of prime territory for both lobstering and fishing. This threat comes at a time when we have now just begun to see some signs of recovery in the lobstering industry.

In addition, through a new permanent 1200 foot by 180 foot vessel in our waters, the Broadwater proposal would establish so-called exclusionary zones prohibiting any vessels from coming within a certain distance from both the facility itself and the delivery tankers.

It would take the entire security zones surrounding a moving tanker 15 minutes to pass any given point, potentially causing major disruptions in maritime travel every time these tankers enter the Sound to deliver international shipments of liquefied natural gas two to three times a week.

We have an obligation to address grave concerns about security, safety, and the strains this project would put on the Coast Guard. And I do not believe the successful case has been made which addresses those concerns. In fact, responsibility for enforcing these secure tanker zones would fall to a Coast Guard that is already stretched thin.

Instead of managing our fisheries, conducting lifesaving operations, and monitoring port security, it will be diverting resources to these new LNG tankers which itself would pose a new security risk.

I'm also concerned about its potential impact on our first responders. To be sure, the Broadwater facility is not technically in Connecticut waters so I have said and it would be the Coast Guard's responsibility to respond to problems at the site, but the truth is, that Connecticut's first responders will, of course, respond to any emergency in the Sound to offer any assistance possible.

Tankers entering and leaving the Sound will be in Connecticut waters from time to time and should an emergency arise, our emergency personnel will respond. Yet, few departments, if any, have the resources or personnel to handle this kind of emergency.

Between fiscal years 2005 and 2006, Connecticut's homeland security first responders' State grants were cut by 28 percent or four point three million dollars. They have yet not fully recovered. By putting increased pressure on our first responders, Broadwater would not help.

And as my colleague, Mr. Bishop, has pointed out, the situation we have with the budgets today and the unlikelihood of these budgets and these grant programs increasing. Looking ahead, we need to ask the hard questions about this facility's full impact on our regional and our national security. We are already forcing the Coast Guard and our local first responders to do more plus they are already dealing with the Groton Submarine Base, Millstone Nuclear, and international shipping traffic on a daily basis.

We all understand the need for greater infrastructure and additional energy resources. On a national level, they play an integral role in our economic, environment, and foreign policy. On the local level they have direct impact on the cost of doing business and our quality of life. These are important questions; however, I do not believe this Broadwater facility provides the right answer.

Finally, finally, finally, fishermen have worked these waters through generations. Thousands of residents and visitors spend their free time enjoying the quiet beauty of its water and its landscape every year. We know what it means to our community on so many levels because it has always been at the very heart of this region's heritage.

We have a responsibility to maintain that heritage, to step up as responsible stewards of our natural resources, keep our Coast Guard strong, support our first responders, and protect our community. Thank you.

Mr. BISHOP. Thank you very much. Before we proceed with our first panel, let me do a couple of housekeeping details. First let me ask that everyone please turn off their cell phones or put them on silent or vibrate. And the second is that, much as I appreciate the applause, and Congresswoman DeLauro's very kind comments

about me, I would ask that we have no outbursts of any kind, either positive or negative.

Let's proceed to our testimony. Panel number one is comprised of four local elected officials. We have the Honorable Steve Levy, the County Executive of Suffolk County; the Honorable Brian Foley, Supervisor of the Town of Brookhaven; and our host, the Honorable Bill McGintee, Supervisor of the Town of East Hampton. We have the Honorable Kevin McCarrick, Councilman of the Town of Brookhaven and also our host.

Your full statements will be submitted for the record. I would ask that you limit your testimony, your verbal testimony now, to five minutes each and let us begin with County Executive Levy. Mr. Levy.

**TESTIMONY OF STEVE LEVY, COUNTY EXECUTIVE, SUFFOLK COUNTY; BRIAN FOLEY, SUPERVISOR, TOWN OF BROOKHAVEN; BILL MCGINTEE, SUPERVISOR, TOWN OF EAST HAMPTON; AND KEVIN MCCARRICK, COUNCILMAN, TOWN OF BROOKHAVEN**

Mr. LEVY. Thank you. It's truly an honor to be with you all. Welcome to our friends from outside of the Long Island area, Congresswoman DeLauro, counsel, and others from as far as Washington, D.C. I say first of all, Tim, the people on this panel are not—it's not a very common thing for us to have our back to the audience.

It's a lot more comfortable sitting there looking out. This way if there's any projectiles coming our way, we can duck. So I'm going to ask you to hang in with us.

For those who aren't—by the way, we do have some written testimony we'll hand in. I would rather speak more off text especially to our friends from outside the Long Island area, and for the record so those from Washington reading this would get an understanding of what this town is all about here on Long Island, here in Suffolk County.

We are number one in many ways. We are number one in population. We are the largest Suburban County in the entire State of New York, 1.4 million residents. We're a suburban county, but in many ways still rural. In fact, we are still the number one county in the State of New York in terms of agriculture produced from a revenue standpoint.

Our number one industry is tourism. None of the people would understand that or recognize that outside the area but they should be very aware of that fact and that's why we prize our environment to such a great degree.

We're number one in aquaculture as well. Our Sound, our Peconic Bay, our Great South Bay have helped produce a tremendous industry for clammers, for the shellfishing industry. In fact, at one point 25 percent of the entire Nation's scallop harvesting came from Suffolk County. It's a \$5 billion regional economy that is fostered from the Long Island Sound and that cannot be underscored enough.

We're also number one when it comes to preserving our open spaces. We are the envy of every county throughout the State and I would say the entire Nation. We preserve these open spaces because we believe in our environment.

The history of Suffolk County cannot be written without also understanding how much and how vigorously we fought another Federal attempt to industrialize us in some essence, that was the Shoreham Nuclear Power Plant.

Back in the late 60s a power plant was proposed here on the north shore of Suffolk County and this county rallied together its elected officials and its residents to a degree that no one ever felt—everyone said we would not be able to fight, we would not be able to win.

We did fight in that particular instance and we did win. In this particular instance, we are opposed to this Broadwater concept. We're going to fight, and I think just like with Shoreham, we're going to win.

Let me tell you why I think we should be opposed to Broadwater. Number one, we don't need it. There's great—obviously, we are a large county and we're always growing and we can't say no to everything. I'm not a believer that you go out and you oppose every attempt for a windmill and every attempt for hydropower and every attempt for any kind of power plant that might be built in your particular community.

In fact, over the last several years we've constructed over 11 new power plants in Suffolk County and Long Island and that's a good thing. We need more power. But only 15 percent of the gas that will come into our Sound will inure to the benefit of Suffolk County.

So here we are absorbing all the risk and getting very, very little benefit. Moreover, we have two—we have two pipelines that are in the pipeline, no pun intended, Iroquois and the Islander East. Once they are on line, we will have more than an ample supply of natural gas. Secondly, the security that would be involved and required to this is enormous. It will not only cost us a great deal of money, and by the way the proponents of Broadwater will say that they will pick up the tab. I will believe that when I see it.

But nevertheless, it's going to cost us a great deal of money, and it's going to close the perimeter, not only around the Broadwater plant but for those 312 tankers that will come into the Sound on an everyday basis.

I know I am out of time but I will go to the last reason that we should be opposing the Broadwater plant. It's going to have a tremendous impact on our ecology. It's going to suck in a tremendous amount of water and actually warm up the temperatures of our Long Island Sound and that could have a deleterious impact on the ecology.

So basically to conclude, when it comes to Broadwater, we don't need it, we don't benefit by it, we can't secure it, and it will impact the temperature of our Sound. For that reason, Ladies and Gentlemen, we thank you for having this hearing and we thank you for the opportunity to express our opposition as the people of Suffolk County, 1.4 million, who believe there is a better way.

Mr. BISHOP. Thank you very much.

Please, no outbursts. Please, no applause, no booing, no cat calls, thank you.

We will now proceed to Supervisor Foley. Supervisor Foley, you are recognized for five minutes.

Mr. FOLEY. Thank you, Congressman Bishop and Congresswoman Rose DeLauro. We thank you for taking the trip across the Sound. Certainly many ways Connecticut and Long Island have many common interests and certainly this is one of the most important. We also realize that the purpose of today's testimony is to focus on safety and security issues which will be the substance of my remarks.

I would like to thank the subcommittee for conducting a hearing at Brookhaven Town. For the record, my name is Brian Foley. I am the supervisor of the Town of Brookhaven. As supervisor and a member of the Town Board, I also represent close to half a million residents who live in our township. Today I wish to express the Town's grave concerns with the safety and security issues surrounding the liquefied natural gas tankers and the LNG barge that Broadwater proposes for the Long Island Sound.

The north shore of our Town has miles of precious coastline and acres of embayments, including fish habitats and wetlands feeding into the Long Island Sound, which has been declared by Congress to be an Estuary of National Significance. The residents of the Town of Brookhaven are very proud of our rich maritime heritage.

Our concerns with the Broadwater proposal were heightened by the forthright admission in the United States Coast Guard Long Island Sound Waterways Suitability Report which I quote in pertinent part.

Quote: "The Coast Guard does not have the resources required to implement the measures which are necessary to manage effectively the potential risks of navigation safety and maritime security."

The Coast Guard went on to note: "Local law enforcement agencies could potentially assist with some of the... Measures for managing potential risk. [We] Recognize that local governments do not have the necessary personnel, training, or equipment," end quote.

Now the Town presumably is one of the local agencies the Coast Guard would rely upon to assist with managing risk. I must tell you quite forthrightly as well that the Town does not have those resources. Frankly, the Town should not be expected to provide security for an international corporate venture. Further, the Town of Brookhaven's taxpayers should not be expected to perform homeland security functions in the face of terrorist attacks. If the Coast Guard does not have the resources to protect us, the Broadwater project should be rejected for that reason alone.

The Town's safety concerns were further heightened upon release of the recent GAO Report which highlighted additional safety issues which have yet to be studied by the Department of Energy. The GAO report also emphasized the disagreement among experts with the conclusions reached in the Sandia Report. The Sandia Report, as you know, is the basis for the safety conclusions in Broadwater's DEIS and the Coast Guard report.

Of significant concern to the Town are the experts cited on the GAO report who disagreed with the Sandia Report's conclusion that the distance of one mile protected human beings from burns resulting from an LNG fire. A significant portion of those experts, fully 25 percent of the experts contacted by the GAO believed that

this one mile assumption is way too small a distance and that burns might very well occur at a greater distance.

At a minimum, this issue should be studied, particularly since the Race, as it's called, the entrance to the Long Island Sound and a prime area for fishermen and boaters from our Town, is only one and a half miles wide in some areas, way too close for comfort and something that we are very, very concerned about.

Further, we understand the GAO is conducting further studies on the potential impact of fires on marine life and on the Coast Guard's ability to provide security. These studies likely will not be completed until after the scheduled issuance of the Broadwater FEIS, a situation this committee should address.

Finally, the subcommittee should note that the Broadwater DEIS suggests two general areas which Broadwater is considering for its onshore support and launching facilities. One of those areas is Port Jefferson. Nowhere in the DEIS or the Coast Guard report are the safety and security issues related to such a support facility analyzed or even discussed.

In short, safety issues raised by LNG tankers and facilities have not been studied sufficiently to consider placement of the LNG barge in an Estuary of National Significance such as the Long Island Sound. We suggest that Congress act to prevent further action by FERC on the Broadwater application until the GAO studies are completed and until an analysis of the security and impacts of the potential Port Jefferson launching facility is concluded.

Finally, we must emphasize that in no way should FERC or Broadwater expect local government to bear the burden of Broadwater's security. Thank you very much.

Mr. BISHOP. Mr. Foley, thank you very much.

We will now proceed to Councilman McCarrick. Councilman McCarrick, you are recognized for five minutes.

Mr. McCARRICK. Thank you, Congressman Bishop and thank you, Congresswoman DeLauro for coming across the Long Island Sound that doesn't separate us, it joins us together as you know. And there couldn't be a more important issue. My name is Kevin McCarrick representing Council District 2 in Brookhaven. My district encompasses parts of at Terryville, Ridge and Coram as well as the shoreline hamlets of Miller Place, Mount Sinai, Rocky Point, Sound Beach and Shoreham. As the elected local representative for the hamlet of Wading River, I'm greatly concerned regarding the potential effects of locating an LNG barge facility off Shoreham/Wading River in Long Island Sound.

Anyone who doubts the sincere and overwhelming magnitude of public concern need not take my office or any other elected official's word. They need not to consult leading environmental activists or science experts regarding the Broadwater proposal. Indeed, all anyone needs to do is recall the 1,000 plus residents of our northeastern communities who attended the FERC public hearing of January 11, 2007, some parking as far as a half a mile away just to attend. The FERC hearing I attended in Rancor was just as heavily attended and overwhelmingly in opposition to the proposal.

We as a community from all walks of life and all occupations voice in near unanimous harmony a reverberant "no" to the Broadwater proposal.

Among the many concerns was the real possibility of a terrorist incident at the site. Sadly, we live during a period in history where the very possibility of such an action is ever present. We live with the very real possibility of an attractive target drawing and increasing the likelihood of a terrorist action based on the very nature of the activity. A large floating LNG bomb is undeniably such an entity that by its very nature increases the likelihood of an attack. The World Trade Center stood as a beacon of our Nation's economic might, its size attracted two attacks over the course of eight years, each causing harm culminating with the unthinkable catastrophic incident forever burned into the American psyche.

We run the same type of risk by the very nature of this LNG proposal regardless of what anyone states. The reality of the terrorist mind needs to be confronted boldly. I have been active in considering these sets of facts. Official governmental publications support these concerns and we need to seriously consider them. My constituents and I would be impacted directly by the LNG barge, the tankers, and other related activities.

We are deeply concerned with the statements in the Coast Guard Report released on September 21 of 2006 which candidly admits that the U.S. Coast Guard does not have the resources to provide security for the LNG barge, the tankers, or provide rescue service for the workers or tankers and barge. The local volunteer fire departments are not equipped to respond to the magnitude of possible incidents such as LNG fires or explosions.

I attended the hearing conducted by the Suffolk County Legislature's Committee on Energy and Environment last month where GAO staff answered questions from the committee and the public regarding its recent report on the public safety consequences of a terrorist attack on LNG tankers.

The statements at the hearing underscored the fact that the potentially disastrous impact of an LNG accident, explosion, and fire have yet to be studied sufficiently. Most troubling is the fact that there is not scientific unanimity on the question of the distance one must be from an LNG fire in order to be protected from heat burn. Indeed, the Sandia Report—which is the foundation for the DEIS—is being called into question as to the one mile estimate of the distance one must be in order to be protected from burns from an LNG fire. The range, according to some experts weighing into the GAO, may be further.

Further, we learned for the first time at the Suffolk County Legislative hearing that the GAO is conducting additional studies as to the safety of the LNG facilities. Evidence of this is outlined in the GAO report of February of 2007 entitled Maritime Security Public Safety Consequences of a Terrorist Attack on a Tanker Carrying Liquefied Natural Gas.

DOE recently funded a new study to be completed by the Sandia National Laboratories of 2008 that would conduct small and large scale LNG fire experiments to refine and validate existing models such as the one used by the Sandia National Laboratories in a 2004 study to calculate the heat hazards of a LNG fire.

Locally, our hospitals are under siege, grappling with questions of funding. There are very real possibilities that some maybe forced



to curtail services or to close. If this becomes reality, will we be able the service anticipated victims?

Proponents of the Broadwater proposal state we must have this source of LNG to serve the growing energy appetite for the region and this additional source in a competitive market will lower the price. If every home and business here on Long Island were to replace five incandescent light bulbs with compact fluorescent bulbs, we would save millions of dollars, clean our environment, and eliminate the safety and security questions we are addressing here today. But additionally, we drastically reduce our need of this imported fossil fuel here.

If we consume less energy, we become less of a target market to sell and then maybe we won't get proposals that require us to question our need to consider a project like this. We wouldn't need hearings like this. That's Broadwater's inconvenient truth. On behalf of the people of the Second District, I thank you for this opportunity to address you.

Mr. BISHOP. Mr. McCarrick, thank you.

I now recognize Supervisor McGintee for five minutes.

Mr. MCGINTEE. Thank you, Congressman and thank you for having this forum and allowing this panel to speak. Congresswoman DeLauro, welcome to this side of the Sound. It's a pleasure to have you here. I'm kind of uncomfortable because where I come from, we prefer cat calls and noise from the audience. We're kind of used to that. I would like to read my statement and then I have some of my own comments to follow.

For the record, I am the Supervisor of East Hampton Town. The plan for a Broadwater liquefied natural gas terminal on the Long Island Sound will require transit through Montauk Channel and Point Judith Channel of large LNG carriers to supply the terminal. Broadwater expects six trips by these LNG carriers per week. One of the safety measures that the Coast Guard will impose on the carriers and barges is a security zone that will require other vessels to cease their activities and leave the area while the LNG carriers are passing thorough local waters.

The consequences of a catastrophic incident with one of these carriers is so serious that the Coast Guard requires a moving safety zone around them 6,000 yards long and 1,600 yards wide. That is 60 football fields long and 16 football fields wide moving with ships at 10 knots. Just off point for a moment, it takes 15 minutes for that zone to move from the end to the beginning which would be inconveniencing a lot of fishermen and a lot of recreational boaters in the eastern end of Long Island.

Although the LNG carriers and the barge are not expected to enter East Hampton borders, except for the occasions on which they may travel off course, the project will cause a serious disruption to East Hampton commerce and our way of life.

The Race, the most dangerous part of the route for the LNG carriers to navigate, is one of the most heavily used fishing spots on the East End. Vessels, particularly vessels from East Hampton, utilize that area almost every day weather permitting. East Hampton Town is home to over 2,800 boats of all types. All of these vessels have a potential to be impacted by this proposal.

I will point out in the Coast Guard Report it says East Hampton's commercial fleet consists, I believe, of eight to 10 boats and that they scallop and that is so far from correct. That should be changed. For example, fishing vessels make up a large component of the vessels that use the Race and include commercial fishing vessels such as lobster boats and trawlers as well as recreational and sports fishing vessels.

It is estimated that the value of fish land in East Hampton is in the 10s of millions of dollars. The path of these fishing vessels in many instances intersects with the parallel of the LNG carrier routes. These fishing vessels create a significant security problem to the LNG carrier routes.

Fishing vessels are not the only vessels to be affected by the LNG routes and safety zones. These areas are also intersected, for example, by private ferry vessels and recreational boaters. Commercial boaters are likely to become aware of the time periods during which they may no longer traverse certain waters, although it should be anticipated that certain individuals will refuse to recognize such limitations on their livelihoods, if anybody is aware of the independence of the fishermen in Montauk and in East Hampton, they will understand that they will not take lightly being locked out from their fishing grounds for any period of time. Recreational boaters may not be aware of such limitations and accidentally pass into forbidden zones.

In this report the Coast Guard specifically states it currently does not have the resources required to implement the measures that have been identified as being necessary to manage the potential risk through navigation, safety, and maritime security associated with the Broadwater energy proposal.

The Coast Guard states that it will rely upon local enforcement agencies such as East Hampton to assist in implementing some of the measures identified for managing potential risks in maritime security associated with the Broadwater energy project.

Thus, much of the burden for providing security for the LNG carriers of the East End of Long Island would fall upon the Town of East Hampton and its Marine Patrol Unit.

Specifically, the Broadwater proposal would require law enforcement from the Town of East Hampton to keep vessels out of the security zone, to warn, arrest, and impound fishing and other vessels obstructing the security zone, to aid and assist those with medical emergencies on the vessels, and to deal with law enforcement issues on the carriers. In addition, the Town would be required to assist with the clearing and assisting vessels and tankers in navigation mishaps in the shallow water off the Montauk Channel.

Accidents or mishaps involving LNG carriers' dangerous cargo in East Hampton Montauk area also could require Town Harbor Masters to close Montauk Inlet and would require local police to close onshore facilities, tourist attractions, and the docks at the Montauk Harbor area. The Town's marine patrol fleet consists of two 18 foot marine patrol boats, one 32 foot work boat, and several 20 foot outboards. None of these boats is armed.

The Town is not at all equipped to meet the security demands which would be required by Broadwater proposals. The Town tax-

payers should not be forced to expand its military control unit for the benefit of a for-profit operation such as Broadwater.

The Town of East Hampton is frequently called upon to assist the Coast Guard even with its current more limited duties. The Town has always worked cooperatively with the Coast Guard to assist it in security and safety measures in the waters off the East End. From the Town's experiences, however, it appears the Coast Guard lacks the financial capital and financial resources to maintain even the current level of need in Montauk. In order to protect the safety and security of its citizens and visitors, the Town would need to be assured that the LNG carriers are safe, the safety zones are secure, and any impacts to its vital fishing industry and recreational boating are minimized.

The Town of East Hampton should not be the entity of footing the bill to ensure the safety and security concerns.

Mr. BISHOP. Thank you, Mr. McGintee.

We're out of time. We're going to now to proceed to questions. I thank all of you for your testimony. I'm going to start and, Rosa, I will recognize myself for five minutes.

I just really have two questions. I would like to put each question to each member of the panel and the first is for all of you: To what extent has your office been involved or had any say at all in the siting process for the Broadwater facility? Mr. Levy, I'll start with you.

Mr. LEVY. None.

Mr. BISHOP. Mr. Foley.

Mr. FOLEY. A verified none, sir.

Mr. BISHOP. Mr. McCarrick.

Mr. MCCARRICK. Same.

Mr. BISHOP. Mr. McGintee.

Mr. MCGINTEE. I would like to be able to answer differently, but none.

Mr. BISHOP. Thank you.

The second question, the Coast Guard Waterways Suitability Report suggests that there will be a mix of law enforcement that would be involved. There has been some suggestion from Broadwater that there will be private law enforcement and security provided. And so my question to each of you is: What is your reaction to the prospects of private security patrolling the waters off of Suffolk County that is not under the jurisdiction of either the local authorities or the Coast Guard.

Mr. McGintee, as a law enforcement officer, I'll start with you.

Mr. MCGINTEE. I have an enormous problem with it. When you look at this document, and I did spend 25 years in law enforcement, when you plan for security, you plan for your operation. You don't plan for reliance upon other agencies for an ongoing security program. It is clear that the Coast Guard indicates that they can't handle this.

I want to go on the record. It has nothing to do with the Coast Guard's abilities. We have worked closely with them. They are an extremely well trained and talented agency. The problem is is that they don't have the staffing currently. And my experience—now I don't want anybody that works for the Federal Government to take offense at this—but I doubt very much the funding is going to be

available for the Coast Guard to handle the security in terms of increased training, increased equipment, and increased staff.

And currently with the Broadwater prospectus, they're going to provide 25 percent, allegedly, needs to Long Island and the greater metropolitan area. To me, that leaves 75 percent gap in the energy needs. And I believe once you open the door, there will be many, many people knocking on that door to fill the 75 percent gap.

If the Coast Guard can't handle the job with a business that's supplying 25 percent of the need, I can't imagine who is going to handle security if this expands beyond Broadwater.

Mr. BISHOP. Thank you.

Mr. Levy.

Mr. LEVY. Thank you. The Coast Guard Report itself said quote, "Currently the agencies that could potentially provide assistance do not have the necessary personnel, training, or equipment." That speaks volumes.

Furthermore, if there were this scenario developing whereby the entity itself, Broadwater, was going to be hiring security to provide security in our Long Island Sound, it's a little bit of the fox guarding the chicken coop. That security firm is going to be answerable only to the entity that pays it and that would be Broadwater itself.

It's so absurd to think that we would ever have our Suffolk County fire, rescue, and emergency services units farmed out. New York City anti-terrorist squad would never be farmed out. We don't want security in our Long Island Sound being farmed out.

Mr. BISHOP. Mr. Foley.

Mr. FOLEY. Certainly the public safety issues confronting the Town of Brookhaven, we have a full plate as it is now with public safety issues in our Township. The record should clearly reflect in the East End towns they have their own police department, in Brookhaven Towns and the towns west, it's the Suffolk County Police Department that has the key role in providing fire, rescue, emergency services, and police duties.

So we would be of assistance to the police department in a number of matters and the same holds true with fire and rescue. However, in this particular case, even though we are a township of close to half a million people, to expect us to provide any services out into the Long Island Sound would really greatly impact not only our treasury but also the staffing that we have now, which for the most part particularly in the public safety area, one of things that we had inherited with this new administration, the Public Safety Department in our Township is basically comprised of part-timers.

That is something that, given the size of our township is troubling enough on the land itself. Now, to take that same organization and apply it to an international venture that is on the Long Island Sound, I think makes it even much more problematic.

Mr. BISHOP. Thank you very much.

Mr. McCarrick.

Mr. MCCARRICK. To me are some of the comments of our supervisor, on top of that we have spending out one of our largest bond acts in the history of purchasing a required property in Brookhaven Town which would be part of what our security force will be maintaining.

We have a part-time security force here, and, in fact, all of the maritime rescue services provided on the north shore by completely volunteer fire departments, which by the nature of being a volunteer fire department, only has a limited ability to help. So I see this as being quite a dilemma for Brookhaven Town and the residents being that we are somewhat short.

Mr. BISHOP. Thank you very much. My time has expired.

Mr. FOLEY. There's one additional comment I can give with the permission of the chair and to underscore what Councilman McCarrick had mentioned earlier, showing how local, State, and Federal issues have really come into play here. The State right now is entertaining ideas of reducing support for local community hospitals.

So at a time when we're having an increase of population in our Township, an increase in population in our county, at the same time there are those decision makers at the State level through the Berger Commission Report, looking to reduce the amount of services that the different hospitals can provide.

Some of those hospitals are on the North Shore of Brookhaven Town. You have a holistic decision making process here. It is very problematic to try to place this LNG plant in this particular location for the reasons that they had outlined but also for the additional reasons that when it comes to local community hospitals, which is where, God forbid, if any accident would occur, is where those foreign forces would go to.

We're looking at the spectre of having reduced services to some of those community hospitals that would serve the North Shore of Long Island. So, it's very problematic for both those reasons.

Mr. BISHOP. Thank you very much.

I now recognize Congresswoman DeLauro for five minutes.

Ms. DELAURO. Thank you, Mr. Chairman and thank all of you for your testimony. It's very enlightening. Let me just pursue a couple of pieces of the security issues just for a second and then I'll move to a couple of other parts.

Has any Federal agency explained to you how they will ensure that the security resources are in place before the facility is approved for construction?

Let's go down the line.

Mr. LEVY. I would say to the contrary, they have admitted that right now they don't have the ability to do so.

Mr. FOLEY. To the Town of Brookhaven, no, they haven't.

Mr. MCCARRICK. Absolutely not.

Mr. MCGINTEE. They have not contacted the Town of East Hampton regarding that matter.

Ms. DELAURO. Do any of your local law enforcement agencies currently provide on water patrol services now?

Mr. MCGINTEE. We do. We have a Marine division that patrols the inner harbors and outside.

Mr. FOLEY. We have some, through the aviation transportation department, some personnel who patrol some of our local waterways through the Port Jeff Harbors and the like. Again, in a very limited fashion.

Ms. DELAURO. Very limited, right.

Mr. MCCARRICK. Actually, in Brookhaven Town, they are not prepared for response to emergencies where there are situations where people are injured. That falls onto the Suffolk County Police and local volunteer fire departments.

Mr. LEVY. Our Suffolk County Police Department does have a marine bureau but it has never contemplated anything of this matter.

Ms. DELAURO. Let me just quickly tick off the budget that was proposed to the Congress in terms of this area that you're talking and the level of expense that you would have to bear and don't know what those numbers are yet.

Let me run those quickly and then I have a couple of other quick questions. State and local grants drastically cut 63 percent from 2.7 billion to 1.9 billion. State homeland security grants cut \$338 million. A decrease of \$112 million for the law enforcement terrorism prevention. The urban area security initiative, the UASI, cut \$170 million. Firefighters assistance grants cut by \$362 million.

I can tell you about the State of Connecticut. We have the law enforcement terrorist prevention program in the '08 budget was eliminated, eliminated in the administration's budget. Overall the 2003-2006 where we had \$81 million dedicated to these areas, homeland security grants slashed 52 percent.

The list goes on and on and on about the cuts in dealing with local law enforcement and their ability to be able to handle any kind of homeland security threats. Albeit, there has been money for border security, but no money in terms of being able to defend homeland security.

Let me just ask these couple of questions to you: What kinds of support would be helpful to communities, I'm going to say Connecticut, but much like your own, in terms of assisting those who would negatively be impacted by the LNG terminal and a weekly tanker traffic? Let me give you an idea.

Should it be mandatory for Broadwater to establish and maintain an environmental benefit fund, a commercial fisherman's fund, a community benefits fund, and a safety and security fund and make payments in lieu of taxes, and I'm going to talk about Connecticut towns?

I would ask you all if you would briefly give me your sense of that kind of an effort and about the tax issue.

Mr. LEVY. Well, ironically, if a company trying to put a big coal plant on the mainland wanted to do so, it would have to go through permit processes, et cetera, pay taxes, do the whole bit. By simply going a few miles offshore, all of the sudden this entity is saying we don't have to play by those rules, we don't have to pay taxes. Now they're saying they'll put money into the local area, we don't know much or whether that would ever materialize.

So certainly that would help. But that's not what we're looking for. We're looking to preserve the integrity of the Sound. What can be done to really put the nail into the coffin of Broadwater? Finally, one of the things presently holding back our flow of natural gas through the Iroquois pipeline and Islander East are some lawsuits generated by the Attorney General in Connecticut.

Any help that your good auspices, Congressman DeLauro, could have in placing some pressure on the Attorney General to ease up

to allow this flow of this natural gas to come from New England and upland down to Long Island, would be of very great help to our economy would obviate the need for Broadwater all together.

Mr. FOLEY. Just to answer the question very briefly regarding funds as a potential way to mitigate, the way we look at it is that once you lose the commercial fishing grounds and once you lose those recreational grounds, particularly the commercial fishing grounds, you're losing a way of life that's been applied in these waterways for generations; 100, 200 years.

So in some respect, it's not just a rhetorical point, it goes to the heart of the matter that no amount of funding could be a suitable substitute for a loss of a way of life that's been part of our shoreline as well as the shoreline of Connecticut for centuries and for generations.

Mr. MCGINTEE. I actually have a proposal that could save Broadwater a lot of money; if they just don't do it, they do have to worry about funding anything. I think if this project were to move forward, then it would be essential that a large sum of money be put into an environmental protection fund for the project.

To me it doesn't matter how much money they put in towards security, it can't be done. I do not have the resources. I cannot expand my marine divisions to the point where they are out there at night, they are out there during the day securing these vessels. One of the things that is missing in this report that I have concerns about, and again we're here to testify about security, the devil is in the detail.

No one explains to me what the Coast Guard would do if a fishing vessel challenged the zone. No one has explained to me what would happen to a recreational boater that decided to cut behind the two mile area. Are these ships going to be armed? Are there shots across the bow?

And what happens to the security breakdown if the Coast Guard vessels have to leave and secure that individual and then they breach their own security zone around the tanker? None of these questions have been answered. So to me, no amount of money on a security end is going to resolve these issues.

Ms. DELAURO. Mr. Chairman, if I might for a second because I believe I owe Mr. Levy a comment about Islander East because I'm nothing but up front about where we are and where we are in Connecticut. I'm obviously opposed to Broadwater and in the case of Broadwater, we're talking about 22 percent of the gas will serve the State of Connecticut. And that maybe as much or that maybe less in terms of Islander East.

So, for the record, I am opposed to Islander East and have been strong in my community about that. I understand your concerns about it but I would be less than honest if I just let that go and let that slide here. I do believe there are other ways in which we can deal with that issue but I don't view that one as one of them and though we do agree in opposition on Broadwater. Thank you very much.

Mr. BISHOP. Thank you very much, Congresswoman. I'm going to exercise the prerogative of the chair and I don't get to say that all that often, and ask one additional question of Supervisor McGintee. You've made clear the importance of both commercial fishing and

recreational boating to the economy, not just of East Hampton but for all of the eastern half of Long Island if not more.

In your opinion, what will be the impact to those two sectors of our economy, recreational boating and commercial fishing, caused by the increase of traffic of LNG vessels bordering our coast?

Mr. MCGINTEE. I think it will have a profound impact on the commercial fishing industry and the recreational fishing industry. I did bring a chart here which had the ex-captain of the Boatman's Association and we do have a commercial fisherman on our board who is actually a member of the county commercial fisheries commission and they've indicated that this would be a great financial loss, particularly in the areas of the Race and the lobster industry and funds to take care of the lobsterman who may have lost pots or cannot get out there at the appropriate tides.

It doesn't do any good—it does good for the lobsterman—but for lobsters that don't make it to market reflect an increase in price to everybody and that includes the entire fishing industry.

On the recreational end of it, I think the impact is going to be more on a tourism and the people that come to spend money in my town and the Town of Southampton, if they are constantly being cut off or they have concerns about either being arrested or detained if they happen to make a mistake of crossing over one of these zones, quite often they're not even going to be aware of what's going on, I think it's going to have a profound impact on the boating community as well as the fishing community.

Mr. BISHOP. Thank you very much. I will now excuse the first panel with our thanks. Thank you very much.

The subcommittee will take a brief recess and will reconvene in about five minutes. Thank you very much.

[Recess.]

Mr. BISHOP. This subcommittee will now reconvene. We will now move to the panel number two. For panel number two, we are joined by Captain Mark O'Malley, who is the Chief of the Office of Ports and Facilities Activities for the United States Coast Guard; Captain Peter Boynton, who is the Captain of the Port for Long Island Sound, United States Coast Guard; Mr. Mark Robinson, who is the director of the Office of Energy Projects for the Federal Energy Regulatory Commission; and Mr. Mark Gaffigan, who is the Acting Director of Natural Resources and Environment for the Government Accountability Office.

As was the case with the first panel, your written statements will be submitted for the record in their entirety. We would ask at this time that you limit your verbal testimony to five minutes and we will start with Captain O'Malley. Captain O'Malley, you are recognized for five minutes.



**TESTIMONY OF MARK O'MALLEY, CHIEF, OFFICE OF PORTS AND FACILITIES ACTIVITIES, UNITED STATES COAST GUARD; CAPTAIN PETER BOYNTON, CAPTAIN OF THE PORT—LONG ISLAND SOUND, UNITED STATES COAST GUARD; MARK ROBINSON, DIRECTOR, OFFICE OF ENERGY PROJECTS, FEDERAL ENERGY REGULATORY COMMISSION; MARK GAFFIGAN, ACTING DIRECTOR OF NATURAL RESOURCES AND ENVIRONMENT, GOVERNMENT ACCOUNTABILITY OFFICE**

Captain O'MALLEY. Thank you, Mr. Bishop. Good morning, Ms. DeLauro. I am Captain Mark O'Malley Chief, Office of Port and Facility Activities at U.S. Coast Guard Headquarters. It is my pleasure to appear before you today to discuss the Coast Guard's role in providing for the safety and security of Liquefied Natural Gas vessels and facilities.

LNG vessels have had an enviable safety record over the last 45 years. Since the inception of LNG shipping in 1959, there have been over 40,000 LNG shipments around the world without a serious accident at sea or in port. LNG vessels and those transporting liquefied hazardous gasses are built and inspected to the highest engineering and safety standards established by the International Code of Construction and Equipment of Ships Carrying Liquefied Gasses in Bulk.

Today there are over 200 vessels operating worldwide and they are expertly manned by some of the most highly trained officers and merchant seamen. In response to the terrorist attacks of 2001, the Maritime Transportation Security Act of 2002 was enacted and required robust maritime security regime for both vessels and facilities. These security requirements closely paralleled the Internal Ship and Port Facility Security Code.

Under ISPS, vessels must develop and implement a threat scalable security plan that, among other things, establishes access control measures, security measures for cargo handling and delivery of ships stores, surveillance and monitoring, security communications, and incident procedures and training and drill requirements.

Additionally, like all deep draft vessels in the United States, LNG vessel operators must provide the Coast Guard with a 96-hour advance notice of arrival and including information on the vessel's last ports of call, true identities, and cargo information. This information is vetted to detect any concerns or anomalies.

The Coast Guard conducts pre-entry security warnings of LNG vessels to ensure it is under the control of proper authorities during a seaport transit. In order to protect a vessel carrying LNG and other especially hazardous cargos from external attack, these vessels are escorted by Coast Guard vessels throughout key port areas.

These efforts are often augmented by other Government agencies and the facilities operators' private security forces who conduct additional activities such as waterway patrols and surveillance.

The combined effort of Federal, State, local, and private assets contribute to the overall local LNG port risk mitigation plan. The Federal Energy Regulatory Commission has siting authority for shoreside LNG terminals. The Coast Guard is a cooperating agency

for the preparation of first environmental impact statements associated with siting of the facility.

The local captain of the port must conduct an assessment regarding the suitability of the waterway for the proposed vessel's transits ensuring that full consideration is given to the safety and security of the port, the facility and the vessels transporting the LNG.

The process involves an area maritime security committee and a harbor safety committee. It includes identification of the mitigation measures to responsibly manage the safety and security risks that are identified in the suitability assessment.

The assessment also includes an analysis of an optimum mix of Federal, State, and local resources in addition to private security forces needed in implementing necessary risk mitigation measures. The Coast Guard continues to analyze resource application needed in light of the potential growth of the LNG industry in the U.S.

This new work maybe accommodated through reallocation of existing resources, expanding the use of other government agencies to conduct security operations, or the use of political resources. All of these options are under consideration. It is important to note that there are other hazardous cargos the Coast Guard regulates and ensures the safety and security.

Our prevention and protection strategies must be aimed at ensuring the highest risk situations receive the highest level of protection. GAO recently concluded two reports; one examined the current security practices for vessels carrying LNG and other petroleum commodities. The Coast Guard had extensive interaction with the GAO in the drafting of this report.

The second report is a comprehensive review of existing LNG consequence studies. The Department of Energy was the principle Federal agency interacting with GAO. The Coast Guard had minimal input into this study. However, we do agree that additional studies are needed to further examine the potential consequences of an LNG contingency. Thank you for giving me this opportunity to discuss the Coast Guard's role in LNG security. I'll be happy to answer any questions that you may have.

Mr. BISHOP. Captain O'Malley, thank you for your testimony.

Captain Boynton, a pleasure to see you again. You are now recognized for five minutes.

Captain BOYNTON. Good morning, Mr. Chairman, Congresswoman DeLauro. My name is Captain Peter Boynton. I'm the Commander of Coast Guard Sector Long Island Sound. I'm responsible for all Coast Guard operations in Connecticut, on Long Island, in Long Island Sound, and 200 miles out to sea, including search and rescue, port security, port safety, and environmental protection.

I supervise 16 field units in Connecticut and on Long Island with 490 active duty and civilian men and women, 200 reservists, and 1,800 volunteer Coast Guard auxiliaries. If I could just comment for a moment as your Captain of the Port, I want to say how much I've enjoyed working with both you, Congressman Bishop and Congresswoman DeLauro, and how much I appreciate leadership from both of you working Coast Guard issues during the last three years while I have served as your Captain of the Port. I am truly grateful for your leadership on Coast Guard issues.

Beginning in the spring of 2005, Coast Guard Sector Long Island Sound has been evaluating the Broadwater LNG proposal for Long Island Sound. The Coast Guard role is not to approve or deny this project. That is the role of FERC as the lead Federal agency. The Coast Guard role has been to determine the suitability of the waterway with respect to just two issues; navigation safety and port security.

When we began this process I gave my staff two rules. The first is that the Coast Guard would neither support nor oppose this project but instead would focus on doing an objective analysis of the risks. Second, that we would not as your Coast Guard do this process behind closed doors. Instead, that we would involve experts and users in our assessment of safety and security.

That assessment took well over a year and involved over 50 experts and users from both Long Island and Connecticut helping us on two committees; one for safety, the other for security.

The security committee examined 26 potential attack scenarios including sabotage, hijacking, stand off attacks, aerial attacks, surface attacks, subsurface attacks. The security committee included 20 participants outside of the Coast Guard and a partial list would include the U.S. Navy, the FBI, the Transportation Security Administration, Customs and Border Protection, the New York and Connecticut Offices of Homeland Security, the National Guard, the Nassau County Police, Suffolk County was represented on this committee by the Suffolk County Fire, Rescue, and Emergency Services personnel, Riverhead Police, New Haven Fire Department, Cross Sound and Port Jeff Ferry among others.

The second committee, the safety committee, examined 25 potential safety scenarios including collisions, groundings, and collisions. The safety committee included 30 participants from outside the Coast Guard including Towing and Shipping Operators, Department of Environmental Protection, Boating Advisory Council, Lobster and Shellfish Association representatives, Riverhead Fire marshal, New York State Police, Key Span, U.S. Power Squadron, National Party Boat Owners' Association, harbor masters, and others.

In other words, in following my rule number two when we examined safety and security, we include representatives ranging from the FBI to representatives of fishermen. With those two committees, we identified potential risks to safety and security.

We then asked both of those committees to help us to go back over those lists of potential risks and help us evaluate whether or not those risks could be mitigated; for example, mitigated with things like security zones which the Coast Guard has in operation today even without Broadwater, not only at locations around the country but even here in Long Island Sound where we have security zones escorting armed Coast Guard boats that very successfully and safely escort U.S. Navy and nuclear submarines through areas where there are recreational boaters.

In the process, I attended dozens and dozens of meetings, some of which I was the only government employee present. I received 2400 letters. I read each one of those letters. I reported this year-long collaborative effort to the Waterways Suitability Report or WSR which was completed in September of 2006.

Before I released this to the public and FERC, I sent this report up the Coast Guard chain for their concurrence with my findings and my statement of necessary resources.

Key findings include that Long Island Sound is a mixed used waterway. The impact of LNG tanker arrivals, that the off shore location nine miles from land is a significant advantage from safety and security in reducing potential consequences because of the distance from any population centers, that none of the hazard zones from the facility would reach land, and neither hazard zone one nor two would reach land from any point on the tanker route, and that hazard zone three could reach land at some locations.

We concluded there were risks to safety and security and that those risks could be mitigated, at a cost. As a result of these findings, the preliminary conclusion of the WSR was that Long Island Sound could be suitable for the transport of LNG from the perspective of safety and security if, and these things are linked, suitable if the risks were to be mitigated, and mitigating those risks carry costs.

Thank you for the opportunity to speak with you today.

Mr. BISHOP. Captain Boynton, thank you very much.

Mr. ROBINSON, you are now recognized for five minutes.

Mr. ROBINSON. Thank you. I am Mark Robinson. I am the Director of the Office of Energy Projects at FERC. We are responsible for the siting of natural gas pipelines, natural gas storage facilities, electric transmission lines, about 2500 hydroelectric projects, their siting, their safety, their security.

More significantly for this audience today, the authorization, the construction, and the operation of LNG terminals.

I would like to touch upon three points today in our discussion: how our siting process incorporates safety and security measures; just briefly, tanker safety and more of that will be discussed by the Coast Guard; and then Broadwater.

First, siting. The point that I need to make here is that siting is a cumulative process. We don't just site, it's one decision at a time. The first step is a pre-authorization process. That's what we're in right now with Broadwater. During the pre-authorization process, we have the initial engineering, we have the initial safety features that will be employed, we have mitigation measures that might be addressed.

We do that in a very open and public forum. We have some of listings of this project and thousands of comments, all of which we look at and address.

The pre-authorization process often culminates with the Commission deciding whether or not the project should be authorized. In the case they do decide it's in the public interest, the one criteria that they look at above all others is can it conclude that the project will operate safely, then they will authorize that project.

But that's just the first step. After the authorization we go into a reconstruction mode of authorization and here one of the more significant aspects of that reconstruction period is something that was required of us by the Energy Policy Act of 2005. We have to develop what's called an emergency response plan during that period; after authorization, before construction. By law we have to do this.

To determine exactly what the specifics are and who will be doing what to ensure the safety and security of this facility, not only do we have a plan developed during that period but we also have a cost sharing mechanism to put into place, which identifies exactly who is going to pay for what.

No construction can occur until that cost sharing plan is filed with the Commission and I have to authorize it, I have to approve it, and allow construction to begin. If it's not adequate, if the costs aren't identified as to how the safety zone will be ensured, one cannot construct.

Let's assume we go through that process and we do, in fact, authorize construction of the project. The second phase is siting. Then we start a pre-operation process which includes the fabrication of materials, the assurance that everything is constructed exactly as proposed, or if it's modified in some way, it's at least as safe as originally proposed.

And only after all of those criteria have been met, once again the authorization holder comes back to the Commission and demonstrates to us that they have constructed the project adequately and that they receive an authorization to operate. So safety is in every one of those phases, is in the primary interest of the Commission and the other agencies that we deal with throughout the entire process, and the public involved.

On tanker safety, just real quickly I want to mention. The one aspect of this that I think we need to make sure everybody understands, is we've been operating LNG tankers around the world for almost 50 years now. There has never been a lost LNG cargo in that 50 years.

You have an LNG tanker coming into Tokyo Harbor, one of the busier harbors, more populated harbors in the world every 23 hours. They've been doing that for decades. LNG ships are constructed in a fashion and have demonstrated they can withstand rigorous activity and deliver LNG safely and they've done it for decades.

Moving onto Broadwater in particular. We received that application in June of '06 but that was after 14 months of a pre-filing process. If you add it all together so far we have spent about 26 months now reviewing this project. There is no rush to judgement on the Broadwater project.

There has been much identified and much learned about this project and some conclusions reached, all of which are now in the phase of a draft environmental impact statement being challenged and reexamined with new information coming in here.

Ultimately, we will issue a final environmental impact statement that will address every single comment that we received on our analysis from critics and proponents alike. Believe me, we get comments about our analysis from both critics and proponents.

Ultimately, we will answer those and put out an FEIS and only at that time will the Commission be in a posture to take action on Broadwater and determine whether or not they believe it's in the public interest.

Ultimately, our objective with the commission is to ensure a contingency rising level of safety and security of these facilities so that

LNG can continue to supply natural gasses to this country and move forward. Thank you very much.

Mr. BISHOP. Mr. Robinson, thank you.

Mr. Gaffigan, you're now recognized for five minutes.

Mr. GAFFIGAN. Thank you, Mr. Bishop, Ms. DeLauro. Good morning. I'm Mark Gaffigan, Acting Director of Energy Issues with GAO's Natural Resources and Environment Team. I'm pleased to be with you this morning discuss GAO's work on the potential public safety consequences of a terrorist attack on an LNG tanker.

As you well know, the Nation's demand for energy is increasing. This includes increasing demand for natural gas. In general the U.S. has largely met its natural gas demand from domestic sources with about 15 percent of its supply imported by pipeline from Canada and only three percent imported from other countries via LNG tankers.

However, this largely North American market is starting to turn more towards sources of natural gas from the rest of the world that must be liquefied and condensed to be carried by LNG tankers to the U.S. Thus, there is increasing interest in expanding the Nation's LNG import capacity with proposed new facilities like the Broadwater facility off of Long Island.

The proposed new facilities along with increased awareness of terrorist attacks after 9/11 has drawn attention and raised questions about the potential of terrorist attacks on LNG tankers and the consequences. The Congress asked GAO, its independent investigative arm, to examine the safety consequences of LNG spills.

Our recent report attempted to identify where there was consensus among experts and where questions still remained about LNG tanker risks. My message today, based on our work that examined multiple LNG studies and consulted a panel of 19 experts emphasizes three points:

One, the most likely public safety impact of LNG spill is the heat impact of a fire.

Two, there are uncertainties associated with the heat impact of fires that could be clarified by further research.

Finally, the U.S. Department of Energy has recently funded research to address large scale LNG fires that addresses some but not all of the research priorities identified by experts.

There is broad consensus that the heat impact of fire is the greatest safety concern. While there are other potential hazards from LNG spills, they are considered to be much less likely to occur or affect public safety. Most notably, experts believe explosions are not likely to occur in the wake of an LNG spill unless LNG vapors are in confined spaces.

The experts also reached a consensus that freeze burns and asphyxiation do not pose a hazard to the public. Uncertainty about the heat impact of an LNG fire was illustrated by different conclusions about the distance at which 30 seconds of exposure to heat can burn people.

The distances ranged from about a third of a mile and a mile and a quarter in the studies that we examined. The uncertainty stems from numerous model assumptions that have to be made because there are no large scale LNG spills from actual events.

Experts we consulted with recommended several research priorities to address these uncertainties which included large scale fire experiments, and the potential for the cascading failure of multiple tanks within an LNG tanker that could impact the fire size, duration, and hazard ranges.

DOE has recently funded research to address large scale spill testing on water and large scale fire testing. However, other research areas such as the potential for cascading failure of multiple tanks within an LNG tanker are an not yet part of the funded research.

However, DOE has agreed with our recommendations to consider research priorities identified by the experts in our report and is considering further research to clarify and better define potential public safety consequences of an LNG spill.

As the Nation looks to expand its ability to import LNG, understanding the risks and resolving the uncertainties associated with LNG tankers will become increasingly important to regulators and the public so that informed decisions can be made about siting new terminals and protecting public safety as LNG tankers serve both existing and new terminals. This concludes my opening remarks. I have submitted a written statement for the record and I welcome any questions you might have. Thank you.

Mr. BISHOP. Thank you very much.

I thank all of you for your testimony.

Mr. Robinson, I'm going to start with you, if I may.

Mr. Robinson, Broadwater has repeatedly made the point that construction of the facility bringing it on line will save an average of \$300 per household. They cite that number in data that they submitted to the FERC as part of the so called resource report.

Very quickly, does that number or any number having to do with potential economic impact to families on Long Island or Connecticut or the New York metropolitan area, does that have any role at all in the FERC siting issue?

Mr. ROBINSON. No. The number that you're talking about has not been filed with FERC. There is information in resource report number five that Broadwater cites, the information they used to calculate that number. But there's been no filing with FERC that reports a \$300 benefit and to my recollection we've never had that type of filing in any LNG case made with us. And quite frankly, it probably wouldn't have much effect if it was filed.

Mr. BISHOP. If it saved zero or if it saved \$3,000 per family does it or does it not enter into your calculation.

Mr. ROBINSON. It does not right now. I'll tell you, if it was filed, it would not have an effect on the Commission's decision making process on LNG terminals and we've looked at a number of variables since 2002 goes primarily, primarily first and foremost, to how we can conclude that the project would be safe or not, everything else is immaterial, including the need for gas.

Mr. BISHOP. Thank you very much. Let me go to Captain Boynton.

Captain Boynton, pleasure to work with you. You and I have had a lot of opportunity to interact and I've always found you to be an absolutely first rate professional and I thank you for that.

To waterways suitability report prepared by the Coast Guard, I believe you were the primary author of that, lists several additional resources that are quote, "necessary to implement the risk management measures required by the Coast Guard," closed quote. Our office queried the Coast Guard as to how much those resources would cost and here's the response we got have it was not from you, it was from someone else in the Coast Guard.

Quote, "While the resources identified are indeed a potential solution, further review in the broader context across Coast Guard sectors districts and the Coast Guard's Atlantic area may well result in a different mix of personnel and platforms to meet this need. If a terminal is approved, the Coast Guard will weigh these responsibilities along with statutory responsibilities to our other mission areas and determine the best resource allocation to mitigate risk across all 11 of our mission areas."

The Coast Guard goes onto say if a terminal is not yet approved, the Coast Guard has not requested new resources or begun the process to reallocate resources and it cannot provide a detailed estimate of future resources.

Now, I have to say that that response gives me great pause because it suggests that the Coast Guard will only undertake the task of specifically estimating cost and specifically assessing the impact of those costs, whether they be dollar cost or reallocation of resource cost, only after the project has been approved. Am I reading this correctly?

Captain BOYNTON. I think part of the answer I'm going to have to refer to my colleague from headquarters because as your Captain of the Port, I don't handle budget issues, those are done in Washington. I can comment on two aspects of what I think you're asking, if you like.

Mr. BISHOP. Please.

Captain BOYNTON. The first is the need for resources, how did we come up with the number of resources that we put in the WSR? And essentially it was a three part assessment. First, what's the safety assessment, where are the risks, and what has to be done to mitigate it. And second, what are the security risks and what has to be done to mitigate them. And third, what is the Coast Guard policy in terms of how we mitigate them?

We have policy documents. It's a classified document. I can't give you the details in this session. I think you're probably familiar with that. It's like a strategy document; here's how you go about protecting things.

Now, if the safety assessment were to change, that could effect the number of resources, the same with the security assessment or that policy document changed. And as we learn more in post 9/11, it's very likely that documents like that would be updated, we'll get better at how we do things and we might even get more efficient at it.

So, if those three variables change, the amount of resources change in terms of where we get the resources from. As your local sector commander, I can tell you that currently I don't have those resources available. It's conceivable they might be available in the future.



Now, there's a second source and the second source is it could be resources available from else where in the Coast Guard and every day we surge resources from one place to another, sometimes temporarily like Katrina and other times permanently.

Another source for resources could be our deployable units like our MSSTs. We deploy them to do things like escort ships. The last resource could be going through the president's budget process. For that I'll ask my colleague if you would like him to comment.

Mr. BISHOP. Captain O'Malley.

Captain O'MALLEY. Thank you both.

Captain Boynton, despite the fact that he is local and not headquarters, did an exceptional job giving a headquarters response. All of the things he said are right on the money, sir. The fact that they are not locked in for Broadwater is a simple fact that, as you are well aware, 40 applications being processed currently.

We anticipate that somewhere between eight and 12 will be approved. So as you can imagine, if you were to set up a template of resources for all 40 applications, then it would create a tremendous resource base that we would have to work from. So we are holding off on the assigning resources until we have approved applications.

The other aspect of this as Mr. Robinson mentioned is that before construction takes place, there has to be a cautionary plan and an emergency response plan put together and that will certainly factor into it.

Mr. BISHOP. Let me just make sure I understand. We're in the pre-application phase. Assuming that the application is approved, the Coast Guard, will then sharpen its pencil and will then look at the recommendations that Captain Boynton's report has made and will determine what fulfilling those recommendations will cost, correct?

Captain O'MALLEY. Correct.

Mr. BISHOP. Let's assume that the Coast Guard comes up with a cost. That cost becomes part of the annual budget request to the Congress and the Congress says, you know what, we've got a lot of other serious problems here. We've got a \$25 billion de-border acquisition program that hasn't gone so well. We just took eight cutters off line. Our first priority is to fix those eight cutters, replace those, we can't fund needs. Does the FERC then not move to the construction phase, Mr. Robinson.

Mr. ROBINSON. Yes, I'm sorry, I thought you were addressing that to the Captain. I think I got the majority of the question. The Commission, in working with the Coast Guard, is never going to allow tankers to come in, and I'm not sure this is my part or a project to be constructed or a project to operate unless we know the mitigation measures, the security measures are the same measures that we have required are back in place and operational.

Generically, I would say that we would just not allow that to occur. The safety of this facility is paramount. I have stopped an operation of LNG terminals at this time when things are going wrong. I've stopped tankers from coming in when a barrel was not in place. We would do that.

Mr. BISHOP. Let me move to a related issue and this is for both Captain Boynton and Captain O'Malley. You make reference, Cap-

tain O'Malley, to the fact that there are 40 some applications pending, all of which will have some level of impact on the Coast Guard, whether it's additional resources or reallocation of existing resources.

Would it make more sense from the Coast Guard's perspective if we had a national policy for the siting of terminals and that we identify the five or 10 or 15 most strategically located areas where these terminals would make the most sense, be operated at the most efficient level, and that we made in effect holistic decisions about what our future energy needs are as opposed to making decisions seriotically, if you look at Broadwater and then you look at one other and then look at another.

I'll put that question first to Captain O'Malley have then to Mr. Robinson.

Captain O'MALLEY. That is a point that we've had discussions about certainly. The Coast Guard is not in a position as Captain Boynton articulated early on to either oppose or support a facility. So we research and look at each of these objectively. Now, that question really is far better answered by FERC.

Mr. BISHOP. It may well be but from the Coast Guard's perspective, if you are going to be charged with protecting these facilities, just from the narrow perspective of the Coast Guard, would it make more sense if we had a national siting policy where we made decisions looking at energy needs across the country and looking at the Coast Guard's ability to support those needs.

Captain O'MALLEY. The simple answer to that is yes, sir.

Mr. BISHOP. Thank you very much.

Mr. Robinson.

Mr. ROBINSON. Well—if I've answered the question—if you look at what's going on worldwide with LNG siting, you see different models in different places. The model that you're talking about, there is in fact a Pooi (phonetic) Channel. If you look at a map of the coastline of China, the government has dictated about evenly spaced terminals going down the coastline.

Here, to this site at least, the siting process at work, is that the market ultimately makes the decision which LNG terminal will be constructed because that will provide the most economic source of natural gas, with the caveat that the government makes sure that whatever facility is built can be ensured in terms of safety and security. That's the model we're working under. So far five LNG terminals in this country have been effectively sited.

Mr. BISHOP. Thank you Mr. Robinson, and Mr. Gaffigan—and Rosa thank you for indulging my—

Ms. DELAURO. That's okay.

Mr. BISHOP. Today we've talked about the maritime security report that you've just issued, I would like to ask a question that references an earlier report, January '05 GAO report that was entitled Coast Guard Station Readiness Improving but Resource Challenges and management concerns remain. I will quote from that report: "The Coast Guard does not have an adequate plan in place for addressing the main readiness needs for the Coast Guard's strategic plans for these stations has not been updated to reflect increased security responsibilities and the agency lacks specific planned actions and milestones.

Moreover, the Coast Guard has yet to develop measurable goals that will allow the agency and others to track the stations' progress."

That report as I said was January of '05. To your knowledge has the GAO undertaken a more recent report to address those issues.

Mr. GAFFIGAN. We continue to work on Coast Guard issues and this resource challenge is something that continues with the Coast Guard. We recently testified on the Safe Port Act on the question of resources. The question of resources has been raised today. It's out there and I think it's a fair question to ask and I think it's a question, related to Broadwater, it's a question to resolve now.

The Coast Guard is struggling to meet resources not only for Broadwater, not only for LNG facilities, but for all its responsibilities that have increased after 9/11.

Mr. BISHOP. Thank you very much. Congresswoman DeLauro.

Ms. DELAURO. Thank you very much, Mr. Chairman, and I, too, want to express my thanks to Captain Boynton for your great work as head of the Port. And it's been a pleasure working with you and I'm delighted that you're going to continue to be a Connecticut resident soon, wonderful.

I think it's important if we're talking about—what are the areas that when we talk about what the security needs are, I think it's—let's tick those off lest people think that it's one or two items that would be easily dealt with and paid for. See if I have this right.

The resources which represent significant increase in funding include 187 or 110 coastal control boat 41 foot. 10 rescue boats or UTBs, that's the next generation of small boats. Security boarding teams consisting of one boarding officer, seven boarding team members. 10 to 12 boat crews consisting of 40 to 48 personnel. Two marine inspectors, crew facility inspectors, four logistic support personnel. Is that—

Captain BOYNTON. Exactly correct.

Ms. DELAURO. I think for the record it's important to note that we're not talking about a person here, a boat there. This is a significant commitment of resources in order—no protect the communities, you know, to protect the carrier, et cetera. I don't understand. Let me just ask this of both Captain Boynton and Captain O'Malley.

To what extent now do you depend on local communities to do the jobs that you—I'm just going to tick off a couple of questions—to what extent do you depend on them now? You also have a very serious issue that my colleague mentioned of the Coast Guard being behind schedule in the Deepwater plan to modernize the fleet which is going to take some resources.

We've addressed the issue of—we're putting the cart before the horse here, friends. No one in my community buys a pig in a poke. I'm not suggesting that this is what this is, but if the costs are going—we're going to know about the cost after the fact and then we're going to figure out how we're going to the pay for after the fact, it's a little bit of problem for us to deal with. I know my city of New Haven would have significant problems with that.

You tell me what it's going to cost we'll determine along with our counsel. If not the fact that we can't handle it.

In fact, what level of experience do you have with them now? What is your broad mandate of dealing—what are the responsibilities you currently have in terms of commanding a port here and what resources does that take at the moment? Let me just start with those if you can answer that.

Mr. BISHOP. Thank you. Captain Boynton, if I could just make an announcement. Please, work with me here. Please let's not have outbursts of any type.

Ms. DELAURO. The last question is what else are you charged with protecting?

Captain BOYNTON. Yes, ma'am. I got it. I think out of the four questions I can answer one, three, and four and then problems with Deepwater, I'm going to ask my colleague from headquarters to comment on.

Captain O'MALLEY. Thank you.

Captain BOYNTON. You're welcome.

To what extent do we depend on State and local partners? Congresswoman, I've been in the Coast Guard from Maine to Puerto Rico. And the partnerships we have on Long Island and Connecticut are among the best I have seen anywhere. Suffolk County, Nassau County have the wherewithal of States and it's rare that we have a case for search and rescue, for port security, for marine environmental protection when Suffolk and Nassau are not on the scene with us. They are fantastic partners.

In Connecticut, the New Haven Fire Department, Police Department, Bridgeport Marine Control, Waterford Marine Patrol State DEP—let me just give one example. Last summer—

Ms. DELAURO. I'm going to just interrupt you for a second because the report said that the resources does not have enough resources in the Long Island Sound sector to conduct other missions and to provide the security necessary to protect Broadwater. Those are not my words. Those are the words of the report. Given the good nature and the fortitude of these communities, we're still looking at a lack of resources as I understand it.

Captain BOYNTON. Yes, ma'am. I was giving examples of common partnership without Broadwater, how strong it is, and the fact that we rely on these partnerships with or without Broadwater. The Coast Guard brings certain expertise that local, State, and, county agencies don't have and local, State, and, county agencies bring expertise that the Coast Guard doesn't have.

For example, that deep local knowledge, that ability to be able to tell, well, wait a minute, something doesn't look right here given this locale. Some of my boat crews were born in Nebraska. Some of them worked most of their lives in San Diego. They don't have that local knowledge that the State, county, and locals have. So do we need to work together like a quilt? We do need to and we currently do.

One of your other questions, ma'am, the cart before the horse in terms of resources and localities. I thought I heard some outrage today about the Coast Guard having identified that resources would be needed. Whether Coast Guard or State, county, local, it was clear to us as we did this 12 month study that there would be costs. And my view, right or wrong, was that it was responsible public policy to make sure people knew even when I did not have

the ability to assign a dollar value, that it was responsible public policy to say there will be costs.

Now I have not and will not commit State, county, or local agencies to those costs but I do want to send a flag that says there could be costs.

Ms. DELAURO. No. We very, very much appreciate the delineation of what those costs are and I think we're of the view that we need to have—and I suppose we could bring Mr. Robinson into this effort as well—if we find that the lack of the security resources is not sufficient, to put the project on hold, how is FERC going to—what are you going to do? Are you going to move forward? I think that question my colleague made mention, do you move forward when we don't know how we're going to take care of the security issues here and pay for those issues.

And I ticked off in the earlier panel, Federal Government, anybody who has read the newspapers, I've ticked off for you what was proposed by the president's budget. We will make up some of that, we will address that in a budget that comes out of the Congress but we're not going to be able to make it up in the amount after dollars that we're talking about here to make people whole in order to be able to secure this carrier. So you'll go forward with or without the money for the resources in place?

Mr. ROBINSON. I'll restate, nothing will go forward unless we can ensure that safety measures are in place, and let me give you one example of how this works. The Elba Island project down in South Carolina, it was worked out between the Coast Guard, the operator of the project, and the local Port Authority during consideration of conditions necessary to protect that facility included the purchase of two extremely large tractor tugs with fire fighting capabilities, purchased by the LNG operative.

Those tugs are not only available for the LNG tankers but are also available for other operations and fire fighting capabilities which was not available prior to the LNG terminal coming into place. In fact, just not too long ago there was a house fire that was inaccessible by the fire trucks. The tug went down the river and drowned the house to put the fire out using that equipment to help the local community.

Ms. DELAURO. I just want to interrupt you for a second because I do sit on the appropriations committee. Let me ask the Coast Guard—I know there are two questions still pending here, I haven't lost track.

Is there any U.S. Coast Guard analysis for anticipated need for the LNG security and over the next 10 or 15 years we understand that there's going to be an anticipated growth of the industry.

Captain O'MALLEY. Thank you. There are—there has been significant discussion regarding resources and costs et cetera for upcoming needs for LNG. Before we get into that too in depth, I do want to mention in the past two months we have begun a multi-pronged examination of how we go about our business.

For instance, in February we had members of all the ports involved in the LNG and perspective LNG ports gather to examine how we conduct business with regard to LNG. Just last week we had our experts from around the country meet to discuss how we

provide our security for not only LNG but all certain dangerous cargoes and other law enforcement issues.

Two weeks ago we had all the representatives from area maritime security meet together to discuss how we can better develop partnerships within our port communities sharing the information, sharing threat analysis, et cetera.

Ms. DELAURO. With all due respect, Captain O'Malley, truly, is there, yes or no, does the Coast Guard today have an analysis of anticipated needs for LNG security given 40 pending applications, all that we've been talking about?

Captain O'MALLEY. Well, I'm sorry, I was getting to that, ma'am. What we're doing is these are all interwoven into how we deliver our security toward not only LNG facilities but all chemical facilities and other law enforcement needs. What we do is—

Ms. DELAURO. They can't hear you.

Captain O'MALLEY. Our local cabinet reports are asked to look at all risks and hazards within it responsibility. That is then fed up through the chain of command to us. In that mix, Captain Boynton mentioned, there are significant partnerships. Every Port that has LNG, Boston, Baltimore, and the superb example of Elba Island have excellent partnerships with State and local agencies as well as the facility.

The Coast Guard is very—we respond, you see it every day, Katrina was a prime example, 9/11 was a prime example. Since 9/11 we have purchased 120 boats that Captain Boynton talked about. Not only the boats, associated crew that goes with it. We have established 13 maritime safety and security teams around the country. These teams are deployed to our ports when we hear the needs.

We are very responsive and very nimble. And that four pronged approach that I talked about, Ma'am, is going to bring together how we are going to deliver security for LNG not only involved in Broadwater but across the country. It's a very comprehensive, very inclusive review of all our partnerships and fellow agencies and county effort. And when we progress forward this will certainly be refined to the point where we can take a much harder deliberate look at how the resources are cleaner.

Ms. DELAURO. Mr. Chairman, my time has gone way over but I just would say this; I have very great and deep respect for the Coast Guard. I think you're doing an amazing job. I also believe that the resources are limited and as I understand it, LNG security is not even a specific employment category within the Coast Guard's abstract of Operations System. But I'm going to—this is not about—I am just saying, I think you do an incredible job with the resources you have. My point particularly is that given the scope of what we're talking about here, you do not currently have the resources in order to accommodate what needs to be in terms of security. I'm sorry, Chairman.

Mr. BISHOP. Thank you very much, Congresswoman DeLauro. Let me first associate myself with your remarks both with respect to the work that the Coast Guard does which I think is first rate and with respect to concerns that I share with respect to the Coast Guard's ability to be able to staff up and have the resources nec-

essary to undertake this new challenge. Again I'm going to exercise the right of the chair and ask a couple more questions.

Captain O'Malley, the Cove Point Facility in Maryland, my understanding is that the original security arrangement was that the Coast Guard would provide security for that facility. My further understanding as of June of this year the security of that facility will be transferred to local law enforcement; is that correct?

Captain O'MALLEY. It is correct with regard to security at the facility when there is a vessel moored, yes.

Mr. BISHOP. Just tell me what happened. Tell me why it was that the Coast Guard thought that they could originally undertake it and why it is now the case that they recognize that they either cannot or should not.

Captain O'MALLEY. It is simply a matter of the partnerships that we talked about earlier. The local facilities were able to provide that security when asked and that is—that's what has transpired.

Mr. BISHOP. Mr. Robinson, from the perspective of the FERC, you have said repeatedly both this morning and in your written testimony that the number one consideration that the FERC has in assessing applications is safety and security. Does the kind of security arrangement that is now being put into place at Cove Point that, as I understand it, will be the kind of security arrangement that will be put in place with Broadwater, do you consider that to be the ideal security arrangement or would you prefer to see some other form of arrangement.

Mr. ROBINSON. The security arrangements that are going to be put into place with Broadwater if authorized to construct and operate, we don't know the details of that yet. That would occur, by law, after the authorization occurs and before construction.

But about your fundamental question, I think each project and what happens with each project develops as the local communities become more involved, they're trained, they become more aware of what these projects are about, there is a tendency for them to take on the first calls from when it first is constructed or operated. So I don't see any problem with that. I have great confidence in the partnerships that exist for security measures across the country.

That's the way it works not just for LNG but for all of the terminals.

Mr. BISHOP. But the Coast Guard is a specially trained, highly skilled, arm of our Government, Department of Homeland Security. Would it not be—does it not just make sense that it would be preferable for the Coast Guard to undertake primary security responsibility for the kind of facility that we are contemplating with Broadwater.

Mr. ROBINSON. I think, again, each project dictates what the security measures should be and they should accommodate based upon the resources and their expertise. The Coast Guard certainly has that expertise and at their discretion, if they find that one of the partners can substitute, I have confidence in that—

Mr. BISHOP. In fairness and this is not to aggrandize the role of the Coast Guard, can you articulate for me a substitute security arrangement that would rise to the level of expertise that the Coast Guard already possesses.

Mr. ROBINSON. I'm not exactly sure I can answer that question.

Mr. BISHOP. If the Coast Guard is not going to do it, someone else will do it, correct.

Mr. ROBINSON. I don't think that's correct at all. The Coast Guard will do it working in partnership with other entities, other law enforcement agencies, they will, on individual projects, determine who is best suited to handle aspects of security. And that's the security plan that will be in place. That's the security plan that we will monitor and make sure is effective.

Mr. BISHOP. Captain Boynton, do you want to make a comment?

Captain BOYNTON. Yes, sir. I just want to comment that water-side security at the tanker site is more, does not equal the security. The water-side security alongside of the tanker is the end zone for the security. But if this is done right, there should be a whole series of layers that extend beyond the dock. Typically the Coast Guard has better expertise than our partners to be further away from shore, not in the end zone, but in the yard lines that extend out.

I'm not the Captain of the Port for Cove Point, I don't want to speculate, but it could be that this allows the Coast Guard a platform that's more capable to more often be patrolling further off-shore which is part of the security regime for the moored tanker.

That security regime for the moored tanker in theory extends all the way to the foreign port where it picked up its cargo. And there are certain tasks the Coast Guard is uniquely suited for. When we find a partner that can help us with tasks that they are also suited for, we can reallocate to where we must be and no one else can do.

Mr. BISHOP. Thank you. Two more questions. My understanding is that the FSRU is going to be constructed else where and then towed to the mooring location; is that correct?

Captain BOYNTON. Yes, sir.

Mr. BISHOP. And when it's being towed there, is it a vessel?

Captain BOYNTON. Congressman, I can tell you that we are treating it in a regulatory manner once it's moored as a facility with vessel like characteristics.

Mr. BISHOP. Tell me what that means.

Captain BOYNTON. I can, sir. If we treated this under the regs as a ship, it could end up being a foreign-flagged barge, and we did not want that.

Mr. BISHOP. But tell me why it isn't a ship. Tell me why it isn't a vessel. Just, for example, my understanding is that the gambling boats in the Gulf States are permanently moored but they are treated as vessels; is that correct?

Captain BOYNTON. I don't have any of those in my zone so I shouldn't comment. I'm just not familiar.

Mr. BISHOP. I think I'm right. Tell me why this isn't a vessel.

Captain BOYNTON. This is not a vessel because we prefer it not being subject to possibly being foreign flagged.

Mr. BISHOP. The Coast Guard is making a judgment call here, correct?

Captain BOYNTON. We're making a judgment call. And under the regulations we can treat this as a facility with vessel like characteristics.



Mr. BISHOP. While it's moving, while it's in transit from wherever it is going to be fabricated to the port location, at that time is it a vessel.

Captain BOYNTON. I would have to respond for the record, because I want to be sure to give you the absolute facts and I can't right now.

[Subsequent to the hearing, Captain Boynton submitted the following: The Broadwater unit was analyzed by the Coast Guard under the principles announced by the Supreme Court in *Stewart V. Dutra Construction Co. Inc.* and determined not to be a vessel under 1 U.S.C. section 3; once it is permanently attached on its mooring post, it is not used or capable of being used as a means of transportation on the water.]

Mr. BISHOP. Counsel, you have a couple more questions.

Ms. DELAURO. Just a quick follow-up. I had another question for Mr. Gaffigan, but where is the vessel being constructed?

Captain BOYNTON. I would have to defer to either FERC or Broadwater for that.

Ms. DELAURO. Can anybody tell us where this or any of these other vessels are being constructed? Are they being constructed in the United States?

Mr. ROBINSON. It's unlikely it is being constructed in the United States.

Ms. DELAURO. Unlikely it is being constructed in the United States.

Mr. ROBINSON. The vessel doesn't exist. It has not been authorized. There's no money being spent in that area and no contracts have been made with anyone.

Ms. DELAURO. I understand that but the assumption is it will not be constructed in the United States?

Mr. ROBINSON. That would be my assumption. You have someone on the next panel who should be able to answer that.

Ms. DELAURO. I just wanted to ask Mr. Gaffigan about the assessment process which what I am concerned about was I believe the current assessment process preceding the siting of the onshore LNG terminal provides a sufficiently comprehensive review of the all the risks and issues associated with the proposed siting.

Does the assessment process include sufficient assessment of the availability of Coast Guard resources to provide security around both the terminals and the tankers? Just a quick answer to those in terms of, you know, GAO's review of the—

Mr. GAFFIGAN. Right. The work we have now is focused on the safety consequences. What I'll tell you is that Captain O'Malley mentioned other work that we're doing. So people aren't confused about the different GAO efforts, you know, there's this report that came out in February '07. There will be a classified version of this which talks to some issues with the LNG consequences.

The other work that we are doing is a broader look at the energy commodity tankers and the security threat that's posed, efforts to mitigate it, and the response capabilities. That report went to the same committees. It also is a sensitive report. We're working with the Coast Guard to get a public version of that.

Ms. DELAURO. So what you're saying is that with regard to the LNG the terminal et cetera terminal et cetera, that what you can't

do is talk about whether or not there has been an assessment of the—sufficient assessment of the resources of the Coast Guard to whether or not they can provide security and that's for security reasons that you can't do that, that's classified document; is that right?

Mr. GAFFIGAN. We did not assess, you know, for example, a particular facility such as Broadwater in terms of whether resources were there or not. What we did look at was the resources that were brought to bear, this report which we're looking on getting a public version out there, that talks to the resource challenges that are faced in response, who is going to be the first responder, all of the issues that are being raised today.

Ms. DELAURO. When is that due?

Mr. GAFFIGAN. We're trying to work with the Coast Guard to try to take out the sensitive information so that it could be a public document. My best guess is in the next couple of months we should be able to have something out.

Ms. DELAURO. Thank you.

Thank you Mr. Chairman.

Mr. BISHOP. Thank you very much. We will now excuse panel two with our thanks and appreciation. I know you all came a good long way to be here and your testimony was very, very helpful. Thank you all very, very much. And we will move to panel three. Thank you. We're not going to recess, folks. We're just going to go right to panel three in a moment.

[Recess.]

Mr. BISHOP. We will now reconvene with the third panel. Our third panel is comprised of Mr. John Hritcko who is the senior vice president and regional project director for Broadwater Energy, LLC; Mr. Bruce Johnson, the Riverhead Town Fire Marshal and Wading River Fire Department in New York; and Dr. Steven E. Flynn, the Jeane J. Kirkpatrick Senior Fellow for National Security Studies, Council on Foreign Relations.

As has been the case with our other two panels, your full statements will be submitted for the record we ask that you limit your verbal testimony at this time to five minutes and we will begin with Mr. Hritcko.

Mr. Hritcko, thank you very much.

**TESTIMONY OF JOHN HRITCKO, JR., SENIOR VICE PRESIDENT AND REGIONAL PROJECT DIRECTOR, BROADWATER ENERGY, LLC; BRUCE JOHNSON, RIVERHEAD TOWN FIRE MARSHAL, WADING RIVER FIRE DEPARTMENT; AND STEVEN E. FLYNN, JEANE J. KIRKPATRICK SENIOR FELLOW FOR NATIONAL SECURITY STUDIES, COUNCIL ON FOREIGN RELATIONS**

Mr. HRITCKO. Thank you, Congressman Bishop, and thank you, Congresswoman DeLauro, for this opportunity to appear in front of the subcommittee on behalf of Broadwater LLC.

My name is John Hritcko, Jr., and I am senior vice president and Regional Project Director for Broadwater LNG LLC. Broadwater is a joint venture comprised of subsidiaries of the Shell Oil Company and TransCanada Corporation.

Broadwater proposes a project that would bring a new source of reliable, long-term, competitively priced natural gas supply to the Long Island, New York City, and Connecticut markets will be commonly referred to as the region. Broadwater has undertaken an extensive regulatory review process at both Federal and State levels led by the Federal Energy Regulatory Commission, or FERC, designated as the lead agency.

As part of that review, a Draft Environmental Impact Statement, a DEIS, was released by FERC late last year. Incorporated into the DEIS was the Coast Guard's assessment of safety and security issues related to determining the suitability of Long Island Sound for the Broadwater project called the Waterway Suitability Report.

My prepared statement, previously submitted for the record, summarizes the detailed application submitted by Broadwater to FERC with emphasis upon the need for the proposed facilities, highlighting the measures to be incorporated into the project to maintain safety and security of the operations and facility, and reiterates Broadwater's commitment to safety and security without burdening the local population.

This region faces enormous challenges with regard to energy. The cost of energy in general and particularly the cost of natural gas is the highest of the lower 48 States in this Region. This Region experiences dramatic upward price swings during periods of peak demand, on the coldest winter days when heating needs are the greatest and during the summer when electricity for cooling are the greatest.

Broadwater is a supply-side proposal seeking to deliver a large, new, diversified supply of natural gas directly into the region. This would be accomplished by siting, constructing, and operating an LNG marine import and regasification terminal in the Long Island Sound, nine miles from Long Island shoreline, which is to be connected to the existing natural gas pipeline serving this region.

Natural gas would be transported and delivered to the Broadwater terminal as a liquid by specially designed ocean going vessels all called LNG carriers. The LNG would be transferred from the carriers to Broadwater and slowly warmed back into the gas and delivered into the pipeline over a number of days.

The siting of the facility was determined based upon a comprehensive and interactive process that evaluated potential terminal designs and sites throughout the entire Long Island region, including both onshore and offshore locations. This siting process evaluated potential sites against a wide range of environmental and socioeconomic criteria. The process and analysis is fully detailed in Broadwater's application filed with FERC.

The economic benefits of having one Bcf per day of natural gas delivered directly into the region by Broadwater are extremely compelling. Broadwater estimates that the wholesale energy savings to the region would total nearly \$10 billion over the life of the project or approximately \$300 to \$400 per year in direct and indirect cost savings for the average home in the region.

Beyond the economic benefits, Broadwater would provide a substantial amount of natural gas that could greatly assist in helping New York and Connecticut meet its clean air requirements as well

as climate change goals under the Regional Greenhouse Gas Initiative.

The safety and security of the adjacent communities and other users of the Sound and the facility is of the highest priority to Broadwater. Key aspects of Broadwater's safety controls and security measures are detailed in the FERC application. Incorporated within the design of the facility is a layered approach to safety and security.

The FSRU will be designed to withstand severe weather conditions and natural catastrophes. Although Broadwater terminal may be among the first FSRUs in operation, it does not rely on new technologies. As such, Broadwater has been able to develop safety and security measures that are proven in the industry today.

Broadwater will meet the requirements outlined by FERC and the Coast Guard and I would like to assure this Subcommittee and the public that we have already made provisions within our preliminary budget estimates of these requirements to ensure the burden for protecting the facility and responding in the event of an emergency is carried by the project itself.

For example; it has been stated that Broadwater will provide the necessary fire fighting tugs as well as security personnel to protect the facility. The project recognizes that local first responders and communities do not have the capabilities to respond to an incident at the facility nor would we call upon the shoreline communities.

At a minimum, however, we would expect to establish communication plans and protocols with the appropriate agencies or departments so that necessary coordination and interoperability between Broadwater and various parties is established. Broadwater is also committed to ensuring that these parties are involved, to the extent that they are willing, in the development of the Emergency Response Plan and security procedures.

In closing, I would like to emphasize Broadwater's commitment to the stakeholder engagement. Since announcing the project in November 2004, the project has strived to reach out to as many Long Island and Connecticut groups and individuals as possible. We have taken much of the feedback and incorporated it into the development of the project so that the benefits of the facility are maximized and the impacts are avoided or minimized.

We will continue to meet with interested groups and individuals who have seen a growing level of understanding about the project and its role in addressing the region's energy and environmental challenges. Thank you.

Mr. BISHOP. Mr. Hritcko, thank you very much.

Mr. Johnson, you're recognized for five minutes.

Mr. JOHNSON. Good afternoon. Thank you, Congressman Bishop and Congresswoman DeLauro. It's a pleasure to be here before this Congressional hearing today. You have my written comments and there are a few things that I would like to highlight during my testimony this afternoon. As part of my qualifications, I've had the honor and ability to serve as a volunteer fire fighter here on Long Island over the last 25 years, and that's unique because our fire services to our communities have been provided by volunteers who do an outstanding job and they are truly unpaid professionals.

And it's important to note that this group has continued to partner not only within our own associations mutually but now with other partners like the Coast Guard particularly following the events of 9/11 through the development of national response plans and our training of as NIMs (phonetic) and we're going to continue to develop those partnerships.

It's also important to understand that Long Island, and I believe to some extent Connecticut, we have a multiple number of emergency response agencies that we need to unite, whether it's for the review of the Broadwater project or just about to coordinate our response activities here in Suffolk County on Long Island with our partners across the Sound.

We're a home rule State. That means that each of the municipalities are a taxing entity and they have their own authority within their individual fire districts, so coordinating those efforts is going to be a significant task. But none is less a very important task as we move forward particularly if we need to develop an emergency response plan for the Broadwater project.

It's also important to note that it is not unusual and certainly is not unprecedented here right in Suffolk County that volunteers are working closely with paid professional fire departments such as that that protects the Islip Airport, protects the Brookhaven National Labs facility or Plum Island. And those groups are part of our mutual aid agreements and we work regularly with them for fires and Hazmat emergencies.

It's also important to emphasize that as the Coast Guard position, my position as emergency responder and Fire marshal for the Town of Riverhead is to take a position neither in support nor opposition to this project, but to be an impartial judge and to look at the risks and to look at the mitigation strategies and determine, if we can, come up with mitigation strategies to make this facility safe and then to report those to the appropriate agencies for final decision.

There are a number of stake holders, as I mentioned, that are going to be involved in this process, not just through Suffolk County but we have local, county, and State officials here in New York as well as our counterparts in Connecticut and possibly Rhode Island need to be united as we work towards the review of this process and we look at developing an emergency response plan that may be appropriate for the facility.

And that process certainly needs to involve not only these multiple responders, the Coast Guard and FERC, and also Broadwater because they have the lot of technical engineering expertise that's associated with this project and they will provide the resources that will be necessary for the work of this group.

I think it's important that we take the time, and the time is probably now, to begin identifying all of these stake holders and bringing them together under the direction of the Coast Guard to continue the work that was done during Broadwater's assessment and the security and safety analysis that the Coast Guard and Captain Boynton's spoke of earlier.

This is really the first time that a lot of us first responders got to meet our counterparts from Connecticut and begin looking at what capabilities we have, what strengths and resources, and start

to build a network that we can build upon for energy response in the Long Island Sound.

That process needs to continue but it's essential that we bring the right people to the table. And one of the things that I think is really critical is that we have to really work really hard to get the participation of both local, county, and State responders that will come to the table that will probably work for as long as 18 to 24 months to make that review and that emergency response plan a good, working, well thought out document.

Part of what we know right now from some of the other testimony of the reports, there are things that we know about LNG transport, there is a lot that we need to confirm, and there's some other studies that may need to occur. And I think for first responders, this is something new for us.

We have learned how to deal with a lot of other hazards that are associated in our response areas here in Suffolk County, things that have become part of our area. We have obtained training and we're able to respond to those emergencies.

But we're going to need training and we're going to need access to expertise in the LNG area for us to participate and really understand the hazards, the risks, and the appropriate mitigation strategies when we talk about fire incidents, when we talk about Hazmat, or other incidents not related to security that could be associated with this project.

I hope that through this review process, we'll be provided the opportunity to do so and that any cost associated with that will be borne by the applicant, and that's not unusual for anything that we look at in our municipal jobs, when we review commercial projects, that we have certain expertise that may be provided to us at the cost of the applicant.

I see my time is almost up but, again, I think the planning process is really the key. The time that goes into that is going to be as important, if not more important, than the finished document because that is going to unite the first responders here in Suffolk County with our counterparts across the Sound and is going to prepare us for any sort of emergency, or better prepare us for any sort of emergency, whether it's associated with the Broadwater project or anything else that we may have been called upon to do.

So I hope that this congressional hearing today will lead us to that next process and it will allow us the opportunity to work together as first responders to come up with appropriate strategies and deliver a report that will hopefully answer some of the questions that we have not been able to answer today about safety, about what assets we have locally, and certainly the cost of those potential assets. Those are all the things I think will come after we have completed our work and the analysis necessary for the emergency response plan.

I thank you for the opportunity today and I will be certainly be available for any questions you may have.

Mr. BISHOP. Mr. Johnson, thank you.

Dr. Flynn, you are recognized for five minutes.

Mr. FLYNN. Thank you. Chairman Bishop, Congresswoman DeLauro from my home State of Connecticut, it's an honor to appear before you to discuss the security issues that are associated

with the growth of the LNG industry within the United States. Given the obvious location of this field hearing today, and the interest it has generated with so many of the people gathered here, I will also offer my assessment of the security risks associated with the Broadwater Energy proposal for Long Island Sound.

Since 9/11, I've testified on 18 occasions before Congress on the issues associated with homeland security, generally, and port maritime security specifically. Most recently on March 19, 2007, I testified to the potential security risks associated with the chemical and petrochemical industry within the United States.

In that testimony, I made the case that many of these facilities represent the military equivalent of a poorly guarded arsenal of weapons of mass destruction. Deadly chemicals are often stored in large quantities in densely populated areas, for instance, near some very important infrastructures such as water treatment plants, bridges, energy facilities, and transportation hubs.

I suggested it was perplexing that a Nation that has expended so much blood and treasure searching for weapons of mass destruction in Iraq would allow what could be their equivalent to sit largely overlooked on the United States's soil. I also pointed that it is prudent to recall that on September 11, 2001 Al Qaeda did not import weapons of mass destruction, they used four domestic airliners as them.

Like many students of terrorism, I believe that Al Qaeda or one of its growing number of radical jihadist imitators will attempt to carry out a major terrorist attack on the United States within the next five years. At the top of the list of likely targets is the chemical and energy industries. I make this case in part because this is what's happening in Iraq and Saudi Arabia and the middle east. The skills are being refined, they are being shared in Jihadist internet chat rooms, and the number of people engaged in terror has grown since 9/11.

While the safety and security risks associated with the chemical and petrochemical industries are real, it is also a risk we must roll up our sleeves and strive to effectively manage.

For a long time energy was cheap, reliable, and its source was largely invisible to the vast majority of Americans. Those days are gone. Energy will cost more. It will be more susceptible to disruption by both natural and man-made sources, and the sources for producing it cannot be kept out of sight and out of mind. As a society, we will have to have an adult-like conversation about how we manage the risks associated with our continued reliance on the energy sector.

Let me be clear, there are important security issues associated with the LNG industry as there are with the operation of oil and gas refineries, power plants, and the transportation and storage of hazardous chemicals associated with the energy sector. Most recently I've written of the danger to Boston should the LNG tanker be attacked by two small boats manned by suicide attackers armed with the latest generation of Improvised Explosive Devices.

Given the number of people living and working on Boston's waterfront and the difficulty of quickly evacuating such a congested area, the immediate loss of life is likely to be 10,000 or more. There

would be a large number of subsequent fatalities due to inadequate capacity at hospitals to treat all the burn victims.

This is a frightening scenario, but it's not one to be used to suggest that LNG always poses an unacceptable risk to the public. Rather, it highlights that the location of an LNG facility and the transit route of the LNG tankers that dock at that facility is the critical ingredient in assessing the safety and security risk.

There is no explosion or mushroom cloud associated with an LNG fire. Because it is stored at such an incredibly cold temperature, it is difficult to ignite liquefied natural gas. It must first spill out of the hull and turn into vapor. Once the gas does ignite, it burns very hot but the range of the fire would be contained to under one-half mile. Also, unlike a crude oil spill, once an LNG fire burns itself out, there is no natural gas left over to contaminate the maritime environment.

My recommendation for preventing the hypothetical scenario I outlined for the Boston Harbor is to construct a replacement LNG facility on a more remote location in the harbor's entrance or to place it further offshore. If an LNG tanker did not need to transit within one mile of a densely populated area, it makes a far less attractive target for a suicide attack by terrorists. This is because, while the fire would be spectacular to watch, the consequences would not.

This brings me to the Broadwater facility proposal. The proposed location of the facility is 10.2 miles from Connecticut and 9.2 miles from New York. And the small number of transits per week made by the tankers arriving through the Race at the eastern end of the Long Island Sound would not put the potential burn-radius in contact with any population center.

It short, a successful attack on this facility or on the tankers traveling to this facility would not endanger the general public. As such, it can offer no real appeal to terrorists who are intent on causing mass U.S. Casualties.

However, there is a different kind of security risk associated with the proposed Broadwater facility and for other LNG facilities located offshore or in remote locations. That risk is that these facilities are likely to make attractive economic targets. This will particularly be the case in the northeast and other regions as they become more dependent on natural gas for the generation of electricity. By 2010 close to 50 percent of New England's electricity will be generated by natural gas.

Should the Broadwater facility be constructed as designed, it will provide nearly one-third of all the daily natural gas needs from Connecticut to Long Island. Accordingly, an attack on unprotected LNG facilities could lead to long-term black outs or brown-outs. This applies as well to other critical facilities within or adjacent to America's waterways.

One potentially positive result of the surge in public interest surrounding the safety and security of new LNG facilities and shipments is that it provides an opportunity to point out the extent to which Americans are becoming increasingly dependent on energy infrastructure that must operate within a maritime and coastal environment.



Quite simply, in the post 9/11 world the United States can no longer rely on the relative safety of the Atlantic and Pacific Oceans when it comes to protecting what is valuable and vulnerable within and alongside the U.S. Harbors and waterways.

In the post 9/11 security environment, we must put in place on America's waterways the means to conduct something akin to community policing. This would represent a sharp departure from the current posture that relies on providing nominal resources to the U.S. Coast Guard and only token State and local harbor patrols. The Coast Guard is simply overwhelmed with its current missions and is unable to provide stepped up capabilities. Locals don't have the resources in place to do this as well. So what is required is a national capacity to maintain a regular cop on the beat presence in waterways proximate to critical infrastructure. We should move to a patrol presence, though not an episodic one.

As I have examined the report for Broadwater, I think that Captain Ford is right, this is a manageable risk, but I would add that we need to move to a place where, and I also agree with him, that it's a natural risk in the context of additional measures to mitigate that risk.

Frankly the major findings of the Coast Guard's Report on Broadwater could be extrapolated to the issue of locating LNG facilities nationwide. First, there's no serious risk to public safety as long as the facility and the vessels that transit them are at least one mile away from a population center. Second, the security risk connected with terrorists potentially attacking these facilities is a manageable one as long as there is enough patrol assets available to routinely monitor the maritime environment in proximity to these and other critical assets.

Managing the risk will require a new commitment in resources at the Federal, State, and local levels. I made the recommendation that the Federal Government undertake a maritime version of the Department of Justice's COPS program and bolster the capacity of State and local law enforcement agencies to hire additional assets to support an ongoing presence to safeguard the safety and security of America's waterways.

The bottom line is this Nation has spent every day since we got into Iraq \$250 million a day for four years plus dealing with the hazard beyond our shores. Yet we seem unable and unwilling to commit the ample resources necessary to deal with the ongoing risks to vital assets within our maritime environment. That kind of approach in dealing with the security threat we face today is unacceptable. Thank you very much, Mr. Chairman, and I look forward to your questions.

Mr. BISHOP. Thank you, Dr. Flynn.

I have my first question for you, Dr. Flynn. In your written testimony you compare the size of the Coast Guard to the NYPD. We all know that the scope of the territory the NYPD is responsible for patrolling is microscopic in comparison with the scope of the territory the Coast Guard is responsible for patrolling.

And if I could quote from your testimony, you say the Coast Guard, quote, "is in no position to provide anything more than an episodic patrol presence even in the busiest of waterways such as the Long Island Sound or the Port of New York and New Jersey."

Now, given your extensive knowledge of the Coast Guard, your service in the Coast Guard, given your knowledge of their current abilities and the requirements to adequately protect critical maritime infrastructure as well as their numerous other responsibilities, what are your thoughts on why it is that the Coast Guard has not yet projected a cost for securing this facility?

Mr. FLYNN. Well, I think the challenge is overall that we have these critical maritime infrastructures on harbors and waterways and the kind of redesign the Coast Guard would have to embrace, is a particular emphasis on small boat operations and essentially more patrol assets on an on going basis. This again is moving from the fire house kind of capabilities the Coast Guard currently has to get specific intelligence after which the Coast Guard moves, that maybe confronts a threat of armed forces and otherwise.

Otherwise, in case of an incident they can respond to, it's very difficult to maintain an on going presence with 40,000 people spread across three million miles of patrol area and 95,000 thousand miles of coastline. So you're talking about a fundamental re-engineering of the Coast Guard to build a sort of community policing approach to manage the waterfront.

This is happening in a time when its offshore assets are literally falling apart. And so its primary mission is then to try to keep problems evolving before they get onshore out there in that environment. They're barely able to do that. And then there's this new need here for active presence to deal with this growth of critical maritime assets within the maritime system.

There's nobody talking about plussing up any serious resources beyond the rate of inflation. So you just can't get there from here. And the Coast Guard, I think, has looked at what to do via the coastline. It's relying primarily on this notion of a sort of strategic depth in the hopes of being able to stop the threat along with a combination of new regulatory regimes and local help and other stuff that we can wade our way through this.

Mr. BISHOP. Let me ask the same question I asked Captain Boynton and Mr. Robinson from FERC; and that is, would it not make more sense for there to be a national policy with respect to these siting issues of LNG facilities? We have 40 applications. My understanding is that the current process is we're going to go through each one individually, assess each one on its own merits, and then determine whether or not the Coast Guard can adequately provide protective services for them.

Would it not make more sense to deal with these 40 applications in some cohesive way so that they're able to make informed judgments about our ability to service them and secure them in a macro sense as opposed to this, as I say, stereotypical decision; decision one, then decision two, and then decision three?

Mr. FLYNN. Absolutely. This is nuts the way we're doing this.

Mr. BISHOP. Don't sugarcoat it.

Mr. FLYNN. Essentially, it's like going around the Country with a bunch of straws and spitballs and try to toss them around and hope something will stick. This is not the way this country should be dealing with reality. And we will need LNG, because of diminishing production of natural gas locally and rising population—you

know we're going to add another 100 million people to this country in the next 25 years.

We can't rely on this ad hoc process that we're using now to get what we need. What I particularly worry about as I look at this natural gas need, the liquefied natural gas, is virtually all the facilities are going to end up down the Gulf Coast because that's going to be sort of the easiest place locally to put these things. That means we're going to go from 100 year storms to 10 year storms by 2050 given the climate change. And we're going to increase the dependency of the utility sector on the use of natural gas.

So literally the lights are going to go out in big portions of the country. We have to have an adult-like conversation about where to locate these, not just simply for the purpose of the economics, but as a nation our vulnerability itself goes up as we import more of this natural gas and become more dependent upon it, but we concentrate in such a narrow geographic area. We've got to change this process.

Mr. BISHOP. Thank you very much.

Mr. Hritcko, I wanted to ask—I want to focus in on the issue of the potential savings that Broadwater continues to talk about three to \$400 per family saving for families on Long Island. Now, presumably that number derives from some calculation of cost of obtaining the, again, the energy, the cost of operating, the cost of getting it there, the cost of operating efforts are huge; all of the different costs that will allow you to calculate what you are going to charge which will then allow you to calculate what families will save.

My questions is rooted in the fact that it doesn't seem as if we have a clue as to what it's going to cost. I mean, we know that the Coast Guard has not made any assessment with respect to what it is going to cost.

We know that the Energy Policy Act mandates the cost share with local municipalities with respect to protection and securing services. But we also know that there has been no definitive discussion, no concrete discussion with any of the local government agencies with respect to what they're going to need to bring to the table, what the costs will be, to what extent you would reimburse those costs.

So in the absence of—or in presence of all of those unknowns, how is it that you can put out there a number that, at least gives people reason to say that there's a cost benefit here and that the benefits outweighs the cost when we don't really know how real or illusory that benefit is.

So with that as a very lengthy question, how do you get to that number and how can those of us reasonable people that are trying to assess this, how can we put any with reliability on that number?

Mr. HRITCKO. Well, to respond to your question and, Congressman, I'm sure you're aware it's a multiple tiered question at best.

Mr. BISHOP. Yes.

Mr. HRITCKO. Let me say that the price of natural gas here in the United States is set by an open market. And what we're looking at here is an analysis of what would happen if we bring in a large new supply of natural gas directly into this region that needs

it so badly and it is so constrained in terms of infrastructure as to how it's going to obtain its supply in the future.

You mentioned a lot of things about what it's going to cost Broadwater, what it's going to cost. That doesn't get to the point of what the impact would be here in the market place if you have this gas delivered. That gets to the point of what would the price be to suppliers or to the operators of the facility.

What we look at and what we presented in the application was the analysis of the U.S. market, and more particularly this regional market, of what economic impact would be entailed by bringing in this large supply of gas. That turned out to be, as I stated in my testimony, as is stated in the FERC application, approximately \$10 billion over the lifetime of the project.

Well, we put that in the application and so many people came back to us and said, well, that doesn't really mean anything. What does that mean to me? That's sort of like talking about the national debt. They asked us to break that down further. So we went back and we took that number, based on economic analysis of the market, this \$10 billion savings, and we determined that it would be a savings to the region of \$680 million a year.

And then the economists went further in using their econometric modeling and government statistics on energy use, the price of energy, and they broke that down further into a number that now appears as the 300 to \$400 per year annual average savings for both direct and indirect cost.

Now what I have to point out is that that number reflects both customers who use natural gas and electricity. A majority of this natural gas is going to be used to generate electricity. So even people who do not have natural gas in their homes will actually realize a savings because of the lower cost of electricity.

So that is sort of the long-winded response to a portion of your question, but I hope that responds.

Mr. BISHOP. Yes. And I'm not trying to ask you to do something that—I'm not very good at predicting the future, I'm going to assume not too many people in here are or we would be playing the lottery. So, what level of certainty can you assign to that number? Because it just seems to me, I'm not an expert by any means in terms of how the energy market works and in terms of pricing, but it seems to me that if you have a set of costs that you're estimating, one component of which is your operational cost which assumes—which includes security and that number is going to change.

That number is going to be significantly higher than you're anticipating, then the cost of delivering the energy is going to go up; therefore, you're going to charge for more for that energy. So, I guess my question is can you or can you not tell us with any reasonable degree of certainty that the average Long Island family is going to save three or \$400?

Mr. HRITCKO. I think maybe the best response to our degree or level of certainty, Congressman, is the fact that we believe that the market is in such need of this gas and that this would be a long-term solution for this region that we are willing to invest a billion dollars in this facility to serve this region long-term.

Mr. BISHOP. Is there any calculation of the cost to the taxpayer of the additional services that would be needed to be undertaken like the Coast Guard, by the Town of Riverhead, by Suffolk County, by the Town of Brookhaven, any of the localities along the shoreline of Connecticut, a calculation of what the cost to the taxpayer will be?

Mr. HRITCKO. While I understand your desire to get to the figure, the situation that we're in right now is that we're at the beginning of the process of talking to emergency first responders on both sides of the Sound, not only on Long Island but also Connecticut and Rhode Island, folks like Mr. Johnson here who is the fire marshal for Riverhead and others like him.

We will not only seek to determine what assets and capabilities are currently here but also what's going to be needed and then develop an emergency response and security plan based upon that. That's a long process. That's going to take us quite some time and we're in the early stage of the process. For me to speculate at this point wouldn't be prudent.

Mr. BISHOP. I guess my concern, my skepticism is that a positive number is being put out there at the beginning stages of this process but what might possibly be a negative number, that is to say the cost to the taxpayers for additional Coast Guard resources, the cost to the taxpayer for additional Town of Riverhead resources, that number remains an unknown until we're much deeper into the process and I have some concern about that.

Mr. HRITCKO. Let me clarify one point. That gets back to the original question. You seem to imply that the cost would somehow be reflected in the price. In fact, as I stated earlier, the price of natural gas is set by the open market. The price is what the price is, it's not something that Broadwater or the suppliers will be able to dictate. The cost will be determined whether or not we either we make a profit or we don't—

Mr. BISHOP. In other words, let me put this in terms I understand. To the extent that the cost associated with operating the Broadwater facilities, securing the Broadwater facilities, cautionary subjects—to the extent that that number is larger than you're currently thinking it might be, the impact of that will be on the profit margin of Broadwater and not on the price of the energy that goes to the homes on Long Island?

Mr. HRITCKO. Exactly. We have to decide whether or not we would go forward with this project if the cost became so large that it makes this project unviable. We don't believe that it's not viable. We think that those costs are in fact workable.

Mr. BISHOP. Thank you very much.  
Congresswoman DeLauro.

Ms. DELAURO. Thank you very much. Let me just—Dr. Flynn, I didn't allow Captain Boynton to answer the question about what else is the Coast Guard is charged with protecting, what their scope of mission is, which is very broad and they do an excellent, excellent job. But the mission is the area of responsibility, Long Island Sound, Coastal Connecticut, North Shore of Long Island, South Shore of Long Island, three deep water ports; New London, New Haven, Bridgeport offshore, facilities located in Riverhead and Northport, search and rescue, ports, waterways, coastal security,

aids to navigation, domestic acts and operation, environmental protection, living marine resources, marine safety, maritime law enforcement, illegal drug missions, MTSA regulated facilities, security zones during Naval unit escorts, maritime security presence, shoreside waterside security patrols, port infrastructure located within the sector the but not limited to, Millstone Nuclear Power Plant, U.S. Naval substations New London, Cross Sound Ferry, Bridgeport Port Jefferson Ferry, Electric Boat, U.S. Naval substations, securing zones at New London Naval Base. It goes on further here, just to tell you home heating oil reserve in New Haven, pipeline supplies, Department of Defense Connecticut and other States, coordinate the Department of Agriculture, the Department of Homeland Security, Water Security measures for Plum Island and—

Anyway, it is extensive and as I say they that do an unbelievable job. Now you have mentioned in your testimony that you believe that we ought to try to have new commitments in resources on the Federal, State, and local levels and undertake a community-oriented police services program, a COPS program.

I might just add to you for your information here that the COPS program was eliminated inside the most recent past, eliminated though worked well. So in terms of thinking about how you expand operation from what we're doing now and try to put a new system in place, Federal resources let alone State and local are almost nonexistent. Now I anticipate you will address some of those needs but not to the extent that you're talking about.

Now, the question is, do you think that you've got a safe and secure arrangement for local law enforcement currently to assume some of responsibility for providing security for these tankers at these terminals, local, your sense of local law enforcement in terms of this effort?

Could the Coast Guard or local law enforcement realistically intercept a boat attack? Do you believe that the security zones created around the LNG tankers are adequate and that the Coast Guard is adequately armed and equipped to enforce these zones?

Mr. FLYNN. The answer is no, there are not adequate resources here in the Long Island Sound to deal with the general challenge of implementing an on going layered security approach to this potential threat. The biggest opportunity to deal with a small boat attack on a ship is not the actual operation of the attack.

You're talking about a 20- to 30-second response time that you're asking somebody in a small boat in a patrol craft to say this person is not a knuckle head but is actually somebody who is intent on a suicide attack on a ship. And then they have to be able to shoot at a moving target from something also moving. That's a very difficult thing to do.

The time that we find to intercept this is during—the bad guys would not just show up, get on a plane, come here, get on a Zodiac and decide to charge out and go after a tanker. They do surveillance and they do dry runs. With a suicide attack you get one bite at the apple, that's it. That's the time when you are best suited both to put in place a deterrent.

When they go out there and patrol and see there is a presence and that the risk of failure goes up. But also, the detection goes

up when you're there. I worry about the current approach that the Coast Guard is taking because of the resources it has. All it allows us to do is an episodic patrol built around guesswork.

We basically—they surge up for the evolution of an LNG shipment, a ship coming in, a tanker coming in, off-load, and then almost collapse with total exhaustion afterwards because it's all the resources they have. And so basically the presence goes down in many cases. Now that is being made up in places like Boston Harbor, by locals who are helping out and some investment is coming at a cost.

The fundamental issue here is as a Nation we're simply not appreciating the fact that we are incredibly dependent on maritime environment for our way of life and our quality of life. And today we've been getting by on the cheap. The Coast Guard is the size of the NYPD and it's responsible not just for the Continental U.S., but Hawaii and Alaska. It's also operating in the Persian Gulf right now providing safety patrols as a part of our war effort over there.

This is a very spread thin outfit. My last real job was as the Captain of the buoy tender here on the Long Island Sound from Block Island to East River, so I know these waters well. There isn't a lot of presence out here. It's a difficult area to patrol particularly in the middle of the Sound. It's a doable issue in terms of managed risk if we're willing to commit to the resources. Right now we have not done that and we don't have the capacity, I think, to manage, not just the LNG issue but the broader issue of a lot of critical infrastructure, there's a lot of waterways that remain a factor as a potential target for terrorist attack.

Again, this seems crazy to me to spend the amount of resources we are. This year we will spend over \$660 billion on our National security and intelligence apparatus to confront threats beyond our borders but we can't seem to marshal hardly any effort here to safeguard the critical assets here at home. It just seems entirely backwards to me that we're still operating this way.

Ms. DELAURO. Thank you for your thoughtful approach to this issue. Mr. Hritcko, in its proposal Broadwater has stated that they will employ a private security company to patrol the FSRU task force meetings, public hearings that deal with concerns about the use of private security companies specifically. There are no provisions in current Connecticut statutes allowing for private security forces to be used in open waters.

In fact, Connecticut does not provide any enforcement or arrest powers to either State or local law enforcement officials on open waters. Who, what agency or government entity has the right to bestow its powers on a private security force? Is there a licensing involved? What should be required of armed patrol boats and the employees of such companies? Do Connecticut and New York need to develop reciprocity language as far as enforcement or arrest powers are concerned? There are no clear boundaries on the open water.

Mr. HRITCKO. Let me start by stating that we have not made the determination as yet as to whether we would in fact employ private security. This is one of issues that we're discussing with first responders in both sides of the Sound. We may have to employ private security for that purpose. However, that's part and parcel of

the discussions that we're now having with the first responders on both sides of the Sound

Ms. DELAURO. One second. You said that Broadwater will have its own 24 hour a day security protecting the facility when it's built as well as a staff of first responders, some of the secure staff maybe hired from an agency. That was from the Suffolk Life Newspaper on April 27.

Mr. HRITCKO. Maybe, maybe, maybe. That's the key thing. We're in discussions right now with first responders for both sides of the Long Island Sound to discuss that matter and to develop those plans. In the Coast Guard's WSR, they indicated there's a number of ways in which we can ensure the safety and security of this facility. And our discussions are to be with these various agencies in order to define how in fact we will proceed forward. So for us to discuss, to say that that will in fact be the case, I cannot say that definitively right now.

But what I can say is some of the issues that you raised in fact are legitimate issues. But I would also point to the fact that private security firms have been part of security operations for a number of facilities not only in New York State but in Connecticut and the nuclear plant. It's also in occurrence in other parts of the United States including the Ports in Florida where cruise ships leave the harbors as well as other facilities, the LNG facilities here in the United States.

So it's not a new or innovative type of response. It's something that we considered in terms of development of our emergency response.

Ms. DELAURO. I'm just saying that Connecticut does not provide an enforcement authority or arrest powers to either State or local law enforcement on the open water. One of the other things I think that you said with regard to security that well, quote, "we will not burden the taxpayers with the cost of security for this facility." Is that something you can state on the record as true?

Mr. HRITCKO. We have said it before and I'll say it again, it is true, yes, in fact that is true. This is no different from anywhere else that companies like Shell and TransCanada and other energy companies operate. We operated in the Gulf of Mexico for years and from the Texas shoreline to Louisiana, to the Mississippi shoreline where you have extensive offshore operations.

We do not call on we do no burden those States with the extensive security and emergency operations. We have to provide it ourselves. Likewise in the North Sea, we have to provide that ourselves. Throughout the world—this is not something new. This isn't something that's unique for us. We do this every day and this is one of the a challenges of developing a project of this nature.

Ms. DELAURO. I would say with regard to Connecticut as I understand it, and I, please correct me if this is incorrect, plan for law enforcement agencies, you have not addressed Connecticut at all yet a tanker travels through Connecticut waters and if tragically something happens there, it would be our local responders who would respond.

As far as I know there have not been any conversations with regard to Connecticut and tankers traveling through Connecticut. I just pointed out that the Coast Guard does have the ability the



stop ships without probable cause but local law does not at the moment. So that would require a different set of authorities.

Mr. HRITCKO. Your first statement that we have not considered Connecticut is wrong. We have spent a great deal of time in Connecticut. The WSR addresses the issue of the routes traversing Long Island Sound the tankers would make. In fact, we have already begun engaging Connecticut first responders on a number of different levels with regard to the emergency response and safety and security plans for Broadwater.

In fact, they point out to us that they see benefits in the future if Broadwater were operational had the assets out there. I should just point out to you, Congresswoman, as you are well aware that the second largest port in New England is there in New Haven Harbor.

Ms. DELAURO. You don't have to tell me.

Mr. HRITCKO. You have ships coming in from all over the world, not only petroleum products but other cargoes that need to be protected but at the same time, there is not the single fire fighting tug in Long Island Sound or in the Port of New Haven. If you stop to think about the future of Long Island Sound with the Broadwater facility here, with the assets that we would bring to the table, it would help the Long Island Sound under a mutual aide packet that would be developed within the emergency response plan. We could now offer some cover for marine type of activities.

Ms. DELAURO. We pay a very high price for that Mr. Hritcko, and I will tell you that the Federal Government in its recent budget cut out fire fighting assistance and grants which would allow municipalities like New Haven and others to get the kind of equipment they need to do the job that they need. The introduction of this Broadwater facility would create an unbearable burden on locations within our State and within the State of New York.

I would dare to say to you at this moment that the difficulties and the inability with regard to resources to address these efforts certainly, I mean, outweigh at the moment, the benefits of what you are talking about. And I don't believe there's a public official in the State of Connecticut, a public official in the State of New York and community groups and individuals, who believe that this will inure to the best, to continued safety of both of our States. Don't get me started on that.

Mr. HRITCKO. I would comment—

Mr. FLYNN. One thing I would like to add and I think it is important to keep in context and that is the LNG tanker is not a particularly soft target. It's very difficult because of the way it is designed for a small boat to be able to successfully breach an internal tank. The amount of explosive required, that scenario would be very difficult. I think what's important to keep in balance here is that there are so many other soft targets in the maritime community of which there are inadequate resources. So it's hard for me to say LNG by definition raises the risk up tremendously.

It's brought focus on an issue that all communities face and I share your concerns and outrage that we're not able to marshal Federal resources to provide better preparedness to get the States involved, but overall attacking a tanker in the middle of the Sound is a difficult thing to do and its consequence on populations won't

be there. If I'm an adversary, I'm going after the heart of New Haven, and bigger population because it would cause a bigger disruption of that harbor. I guess part of the issue—

Ms. DELAURO. I think as I said it is very balanced testimony and I much appreciate the balanced view. I would just say in interpreting what you're saying, we had a total inability, if you want to talk about a Nation in all levels of government that could not respond or privately individuals that could not respond, it's the national disaster of hurricanes.

You take a look at Katrina. There was—this didn't come from outside. This came from within. And the government at all levels failed the people on the Gulf Coast and are continuing in my view to fail them in terms of their ability to try to pick up and to move on.

What we're trying to do here is to be preemptive and try to take a look at what is necessary in order to meet a need. And so far I don't believe we have the review that the resources are there in order to be able to handle this and other venues.

Mr. HRITCKO. Congresswoman, I appreciate your position on this. I'm not here to debate on how we got to where we are. This is the type of debate that we need to have around how we're going to meet our needs in the future and also recognize all of the aspects of this facility. I'm just simply stating to you what I've been told by some of the emergency first responders who are charged with ensuring safety and security of our ports, harbors, and people and we have to recognize that there, in fact, some upsides to having those facilities in the Sound.

Ms. DELAURO. Mr. Chairman, if I might, the question I asked of the last panel; where will the vessel be constructed?

Mr. HRITCKO. Likely in an Asian shipyard because those are the—Korea or Japan because those are a shipyards that are currently constructing LNG carriers. Most of the LNG carriers are specialized vessels and require specialized equipment. This is simply an LNG carrier without propulsion. So the United States is good at building nuclear submarines and other specialties ships. They don't build any LNG carriers at the time so I would say it's highly unlikely we will see the LNG carrier built here.

Ms. DELAURO. Will there be U.S. crews, or are the tankers foreign flagged; will there be U.S. crews on these ships?

Mr. HRITCKO. With regard—Broadwater will own and operate the terminal itself so we don't have a position or an understanding specifically of what the tankers will have. There may be a variety. We expect, looking at the international fleet which is a number somewhere in the order of 100, 185 LNG carriers at the current level that they would probably be a combination.

Ms. DELAURO. A combination of foreign flagged—

Mr. HRITCKO. Foreign flagged, a combination of crews. We're looking at an international trade with multiple parties both developing the LNG—

Ms. DELAURO. I'm told there are no U.S.-flagged—

Mr. HRITCKO. That's right. There are no U.S.-flagged vessels.

Mr. FLYNN. I think it's important to keep in mind here there are only just under 300 U.S.-flagged vessels of greater than 1,000 tons. So there is not a whole lot out there period. So it would with very

unlikely under current market forces that this would be a U.S.-flagged vessel.

Mr. BISHOP. My understanding is there are no U.S.-flagged vessels of 200 vessels currently importing LNG, none of them which are U.S.-flagged vessels. My understanding further is that there are approximately 100 vessels that are expected to be constructed over the next several months—several years, pardon me—and none of them will be U.S.-flagged vessels. It will be all foreign flagged vessels.

They will be crewed in large part by non-U.S. national crews and therefore not subject to the jurisdiction or to the oversight of the Coast Guard in the same way that Merchant Marines of the United States would be subject. And I think that's one of the concerns that I have is that these tankers are going to be transiting within a mile or mile and a half of both the New York coast and some cases the Connecticut coast and we don't know a thing about who is on them.

And my further understanding is that because LNG, the need for LNG is growing, that there is a crew shortage and that certain carriers are ocean crewed from other carriers. Thus we have crews on boats with which they are not familiar and these are highly sophisticated and highly complex boats, all of which seems to be—gives rise to enormous concern about the safety and the way in which the LNG would get to the terminal. Can you comment on that, Mr. Hritcko.

Mr. HRITCKO. Yes. Congressman, I am afraid your information is not correct about security and safety of crews. In fact, it doesn't matter whether it is a U.S. crew or a foreign national crew, they are subject to security reviews both international and U.S. security reviews by the Coast Guard.

There is a 96 hour requirement to report who is on board, what the vessel is carrying, when it's going to arrive. There's extensive review of the vessel before it leaves its ports of origin before proceeding to the United States so there is the tremendous amount of security on that vessel.

Mr. BISHOP. Let me interrupt you. Is the international review, does it rise to the same level the same standard as the United States' review.

Mr. HRITCKO. The international parties have all signed onto the same standards that the United States—

Mr. BISHOP. Do you have the same level of confidence or is it reasonable for us to have the same level of confidence in the international review that we would have for a domestic boat.

Mr. HRITCKO. Clearly there's some parties that are more stringent on their requirements than others, but we have had no incident with LNG throughout the history of LNG of having a problem with the crews or ships. And we have come from all parts of the world including Algeria. I point out in Algeria was our largest supplier of LNG in Boston Harbor for many years and we've never had a problem. So if history is a prelude to what we are seeing in the future, we have had extensive and very good operating history on that.

The other point that I would point out to you, yes, we are in fact in a growing business. There is a large number of carriers that are

going to be needed in the future. Your numbers are approximately correct. We're doubling the size of the LNG fleet that we just had in effect over the last 10 years. So there will be a tremendous need for crews. However, crews have to be competent, they have to be experienced, and they have to be cost effective for these vessels to be operating. And those are key elements so we will have to look at all avenues of being able to double the size of that fleet and have competent and effective crews on board these vessels.

Ms. DELAURO. Mr. Chair, just I think that it would be interesting to know that I understand Shell Oil will build 28 ships, none of them will be U.S.-flagged. You mentioned Algeria, not in connection with Boston, but in January 2004 Algeria. . . Explosion. . . Massive vapor cloud, fire, explosion and fires destroyed a portion of the LNG tanker, caused death injury. . . . Outside the plant outside of the plant's boundaries.

Mr. FLYNN. If I may, Mr. Chairman. The reality is we have a global industry here in the Merchant Marine, and the real challenge is are we setting adequate standards throughout that industry to assure that whoever is coming through, whether from Des Moines or from Dubai or wherever, that, in fact, that there's adequate security for that vessel. I think there has been some improvement since 9/11. Of the industry and crews that I worry about, LNG falls low in that area because of, one, you have to double the size of the crews normally available for a vessel of similar size. The level of qualification is so high that the ability to run an internal conspiracy within that ship would be very difficult without being noticed.

And also it becomes like a milk run, it's the same vessel, it's the same process, and it's much easier therefore to vet. So some of the other safeguards in place, the issue of foreign crew and of course within U.S. waters, Block Island Sound here, it will be highly boarded it will be met and escort, so we'll know exactly what's coming when it's coming.

I've made the pitch that what we should do though is have point of origin inspections. We should have a government agent at the loading point and ideally even ride out with the LNG to the sea buoy so you have confidence what it's vetted is what's leaving. Then you know by ongoing tracking what gets here and you don't have to worry so much about the in between, you track the vessel all the way over.

But I would like to see like we do with containers these point of origin controls, to these hazardous cargoes a similar approach and then you can basically improve the confidence vetting improves, vetting the vessel.

And clearly while it's being loaded would be an ideal time to do that. That's a resource issue, having resources to be given to people. Given the hazards involved, I think it's worth making that investment.

Mr. BISHOP. Thank you very much. I just have one more question. From Mr. Johnson we've heard an awful lot about relying on local resources, we heard about cost sharing, just tell me, Wading River Fire Department, all volunteer, what do you need to do? What needs to be added in terms of personnel in terms of equipment, to respond to a fire a mile and a half offshore, nine

point two miles offshore, just walk us through what your thought process would be and what additional resources you would have to have in order to have any hope of reasonably responding in such an emergency.

Mr. JOHNSON. Well, as I said earlier, I think one of the challenges that we have is we need to become better educated as emergency first responders to exactly what this hazard is and to becoming more familiar with all of the body of knowledge that's out there. This is certainly something that's new.

However, we're used to dealing with our own hazards. If we have a structure fire, if we have a vehicle fire, if we have a rescue close to shore, we trained for that, we're comfortable, we're competent in that. This is something that is very new and very foreign.

So, yes, there are definitely going to be assets but we are not as far along in our understanding of this process for example as the Coast Guard is. So I don't feel that we can develop a list of assets yet. There are certainly going to be things that are going to be needed. As Captain Boynton said, I think my role now is to point out that there are going to be additional assets and not only physical assets, possibly personnel, certainly additional training.

Even as we go through the process of looking at appropriate mitigation strategies and understanding the components of an emergency response plan, the officers, the chiefs, and commissioners that are part of the local response force need to get up to speed in terms of the body of knowledge that's out there. So I have to beg off on the question just a little bit and say that there will be additional assets that will be necessary, there will be additional personnel that need to be trained but exactly what extent, I don't think it's fair to give you an estimate on the record to that.

I think one other point, while we look at our partnerships and I know the Coast Guard is too, that anybody in this area is concerned with security, I don't think that it's appropriate that we give every local first responder all the assets and the personnel and the training that would be necessary to handle an event. We have resources on the coast of Suffolk County. We have resources in Connecticut. We have Coast Guard resources. We have police assets, do we think about those in terms of security, they're certainly available for rescue and you might be able to equip them for fire fighting.

So I think that we can better utilize our resources as we go through this process of appropriate mitigation strategy and our response plan. So that we're not duplicating, because resources are obviously extremely tight. I think we want to be able to take again the strengths we have on both coasts of both States to make sure we are as well equipped as possible but would do so as economically or financially responsible as we can.

Mr. BISHOP. One other question. Mr. Hritcko, the two projects recently licensed off of Massachusetts, both 12 plus miles offshore, very little local opposition, and that there was both Coast Guard—they were licensed both by the Coast Guard and the Maritime Administration. Why not put Broadwater 12 plus miles offshore? Why this location and why not an alternate location that would be safer perhaps and have less concerns with respect to interference with commercial fishing, recreational boating, whatever it is, and cer-

tainly using Massachusetts as a model, less local opposition, so why not move in that direction?

Mr. HRITCKO. We did an extensive, very extensive alternatives analysis as I point in my testimony and is contained in the FERC application, both, as I said before, onshore and offshore locations both Long Island Sound and else where. What drove our decision was essentially three things; reliability of that supply, the ability to move the gas to the market to meet the market's needs, and safety and security.

We had defined the best location in order to meet these three key areas, so that we could provide plentiful, affordable, reliable supply to this region. This location on the Long Island Sound did just that. That is why the—

Mr. BISHOP. Let me interrupt. Are you suggesting that the Massachusetts facilities failed that test?

Mr. HRITCKO. No, not at all. Massachusetts facilities we looked at the characteristics of the market in that particular area and those proposals were acceptable and you had said very little opposition. I beg to differ. But if you look at the record there was a tremendous amount of opposition because they had a lot of activity particularly in the locations they had because of fishing and other areas out there. But the fact of the matter is you have to look at these on an individual basis at each location.

We looked at this region to serve the New York Long Island Connecticut market region specifically and we found that after our extensive review that this location would be the best location to serve this region.

Mr. BISHOP. Thank you.

Congresswoman DeLauro.

Ms. DELAURO. Just to make a comment and I have a final question for Mr. Hritcko. Dr. Flynn, I, too, understand the increase of, you know, globalization and what that means in terms of vetting crews, et cetera. A totally different example that maybe, I hope I'm not comparing apples to oranges. I chair the Subcommittee on Agriculture, the Appropriations Committee, and that committee has jurisdiction over the Food and Drug Administration.

I think most recently we have seen, and this is an area of real globalization, we are looking at continued volume of imported food into the United States.

Quite frankly we do not have, we're now looking at equivalent standards in terms of products et cetera that's coming into the United States. We see yesterday's New York Times that we have product coming in terms of drugs killing 88 people in I think, I'm not sure if it was Haiti—Panama, in any case I understand that we are in a global economy, global world but I think it goes to your point that unless we are willing to deal with technology and the resources that allow us to monitor the process of what is happening with what's coming into the United States, whether it's a or whether it's a product, that it's not going to put at risk the safety here.

We're not shutting down our borders. We want to have our borders open. But we certainly want to protect it and the incidents I am dealing with, we want to protect the public health with regard to food and drugs. We want to deal with protecting—with crew or anyone else—where there are standards that are internationally

reviewed and reviewed so that we know that the people are being trained here and the people that are being trained at Broadwater have the same kind of training so that we're putting everyone not at risk but we're ensuring their safeguard and I watch it fail on one side, failing miserably on one side so it's of concern.

Mr. FLYNN. I couldn't agree with you more that globalization needs sustainable paths to figure out how we manage these risks within that context. The good news on the maritime story is—well, it's sort of good news bad news. From my perspective, I wish we had this conversation in the late 1950s and '60s about the globalization of the maritime industry, from a merchant mariner's standpoint I wish we had that conversation here. We didn't.

The good news side of that is for 50 years we have been developing an international regime that deals with this risk that doesn't exist within the food sector. So there is a baseline to build a advanced standard that's fairly rigorous, not nearly where I want it to be but it's much further along.

I often point to these other sectors looking at models in the Maritime realm that can be drawn with a lot more teeth in them, a lot more explicit—

Ms. DELAURO. I want to see ships coming into our ports as well where we know what the cargo is and we have a way of dealing with that and we have not been able to deal with that in the last several years.

Final question for me, Mr. Hritcko, the floating storage unit with regard to hurricanes, and help us in this regard. What size hurricane could it withstand? You looked at the offshore terminals in the gulf and they failed in Katrina and Rita. Can you describe by the design of Broadwater, is it more likely to survive a Katrina or Rita like storm?

Mr. HRITCKO. This facility is designed to withstand a category five hurricane. A Katrina type of hurricane. We know from looking at the records and we know from meteorological data and whatnot that the occurrence of a category five is virtually impossible in this area. As a matter of fact, the storm of record that everyone points to is the 1938 hurricane and that was the equivalent to a category three.

So this facility could withstand the '38 hurricane and much more beyond that. I think from our analysis and from what our engineers have said, that we would have much larger problems elsewhere if Broadwater were hit by a larger storm of that nature.

Ms. DELAURO. Thank you.

Thank you, Mr. Chairman.

Mr. BISHOP. Thank you very much. I am going to exercise the Chair's prerogative to have the final word. And that is it seems that there's only one known, and that known is that we will become increasingly reliant upon LNG as an energy source. And virtually everything else is unknown. We don't know how much it is going to cost for the Coast Guard to secure this facility. We don't know if the Coast Guard has the resources. We don't know at what cost to the other functions the Coast Guard has to undertake that securing this facility will take. We don't know what demands will be placed on local government. We don't know what those will cost. We don't know to what extent their ability to step up to the plate

in terms of providing security or response. And will it effect their—their ability to do their core functions. We don't know with any degree of certainty, respectfully, Mr. Hritcko, whether or not this \$300 number is a number that we can rely upon. We don't even know what gas is going to cost tomorrow.

So it seems to me, as I said, we have one known. We have a great many unknowns. And in my own view, that there be unknowns, the absence of answers, and the risks that's involved suggest that at this time it's not prudent to move forward on this project.

But with that, let me thank our panelists for their testimony. I know you also came a great distance some of you to be here. It was very important testimony and I thank all of you for coming. The hearing is adjourned.

[Whereupon, the subcommittee was adjourned.]



## COUNCIL ON FOREIGN RELATIONS

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**“A Manageable Risk:  
Assessing the Security Implications of Liquefied Natural Gas and  
Recommendations for the Way Forward”**

Written Testimony before

a hearing of the

Subcommittee on Coast Guard and Maritime Transportation  
of the Committee on Transportation and Infrastructure  
U.S. House of Representatives

on

“The Safety and Security of Liquefied Natural Gas”

by

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One Independence Hill  
Farmingville, New York

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**“A Manageable Risk:  
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by  
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Jeane J. Kirkpatrick Senior Fellow  
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Chairman Cummings, and distinguished members of the Subcommittee on Coast Guard and Maritime Transportation. I am honored to appear before you this morning to discuss the security issues associated with the growth of the LNG industry within the United States. Given the location of this field hearing in Farmingville, NY and the interest it has generated with so many of the people gathered here today, I will also offer my assessment of the security risk associated with the Broadwater Energy proposal for Long Island Sound.

I have previously testified before the Senate Homeland Security and Governmental Affairs Committee on April 27, 2005 and most recently on March 19, 2007 on the potential security risk associated with the chemical and petrochemical industry within the United States. In that testimony, I made the case that many of these facilities represent the military equivalent of a poorly guarded arsenal of weapons of mass destruction. Deadly chemicals including chlorine, anhydrous ammonia, hydrogen fluoride, boron trifluoride, cyanide, and nitrates are often stored in large quantities in densely populated areas adjacent to important infrastructures, such as water treatment plants, bridges, energy facilities, and transportation hubs. I suggested that it was perplexing that a nation that has expended so much blood and treasure searching for weapons of mass destruction in Iraq, would allow what could become their equivalent to sit largely overlooked on U.S. soil. I also pointed out that it is prudent to recall, that on September 11, 2001, Al Qaeda did not import weapons of mass destruction; they converted four domestic airliners into them.

Like many students of terrorism, I believe that Al Qaeda or one of its growing numbers of radical jihadist imitators will attempt to carry out a major terrorist attack on the United States within the next five years. At the top of the list of likely targets is the chemical and energy industries. Al Qaeda has been acquiring experience in these kinds of attacks in Iraq and Saudi Arabia. Between January 2004 and March 2006, insurgents successfully targeted oil and gas facilities and pipelines in Iraq at a cost of more than \$16 billion in lost oil revenues. Since January 2007, there have been a number of deadly attacks involving chlorine tank trucks. The details of their tactics are shared in Internet chat rooms. Further, many of the foreign insurgents have returned or will return to their native countries with the experience and practical skills of successfully targeting these kinds of facilities.

While the safety and security issues associated with the chemical and petrochemical industries are real, it is also a risk we must roll up our sleeves and strive to effectively

manage. The chemical and energy sectors play an indispensable role in the U.S. economy and in supporting our way of life. We need chemicals for everything from making our drinking water drinkable, to manufacturing most of the things we take largely for granted, ranging from automobiles to household cleaning products. Much of the energy we use to heat our homes, to power our factories and stores, and to move us around this vast country requires the efficient and reliable operation of industrial facilities that can safely handle and process vast quantities of chemicals.

The debate over the safety and security of liquefied natural gas (LNG) must be placed against this context of the risk associated with other hazardous substances that are prevalent throughout the U.S. economy. It also must be evaluated against the risks attendant to our reliance on other energy sources. My overall assessment is that if fashioned correctly, the construction of LNG facilities within U.S. waterways and the growth in the number and frequency of LNG shipments to the United States by LNG tankers is both a risk we must and can manage. However, it will require an important shift in the approach by which America has approached the port and waterway security issue both prior to, and even since 9/11.

The United States will need to import a growing amount of LNG to satisfy a rising demand for natural gas, particularly to support electrical power generation. Imports are required because the overall North American production of natural gas will stay flat for the foreseeable future. U.S. natural gas reserves are actually declining and increases in Canadian and Mexican exports via pipeline are barely able to make up the difference. For instance, in 1990 US domestic production satisfied 95 percent of total consumption. By 2003 this figure dropped to 85 percent and it continues to drop. The only way to meet the rise in demand is to import natural gas by cooling it to a liquid state, and moving it in specially-designed tankers. This will translate into the need for additional facilities within the United States that can receive these tanker shipments and convert LNG back into its gaseous form.

I am supportive of the imperative to improve energy conservation in an effort both to reduce our dependency on imported energy and to reduce the damage we are doing to the environment. However, conservation alone will not make up for the need to import LNG for the foreseeable future. The U.S. population has grown from 200 million in 1967 to 300 million in the fall of 2006. Today, North American natural gas production is operating near full capacity, but America's population is projected to reach 400 million as soon as 2043. Adding another 100 million Americans over the next 37 years will translate into a greater demand for energy, particularly for electrical power, regardless of what we can do and must do to embrace energy conservation. The alternatives to natural gas are to expand the number of coal-fired power plants and nuclear power plants. These alternatives clearly carry their own associated risks for the environment, and potentially for security as well.

For a long time, energy was cheap, reliable, and its source was largely invisible for the vast majority of Americans. Those days are gone. Energy will cost more, it will be more susceptible to disruption by both natural and man-made sources, and the sources for

producing it cannot be kept out of sight and out of mind. As a society, we will have to have an adult-like conversation about how we manage the risks associated with our continued reliance on the energy sector. It is not in our national interest to allow “Not-in-My-Backyard” or NIMBY arguments, shielded behind hyperbole over the safety and security issues that are always inherent in the production, transport, and distribution of energy, to carry the day.

Let me be clear. There are serious security issues associated with the LNG industry as there are with the operation of oil and gas refineries, power plants, and the transportation and storage of hazardous chemicals associated with the energy sector. Most recently, I have written of the danger to Boston should an LNG tanker be attacked by two small boats manned by suicide attackers armed with the latest generation of Improvised Explosive Devices (IED). In my most recent book, *The Edge of Disaster*, I wrote a hypothetical scenario that I adapted from the October 2, 2002 Al Qaeda attack on the 157,000-ton crude oil tanker *Limburg* in the Arabian Sea. In it, I outlined the likely consequences of a successful attack on an inbound LNG tanker as the ship makes its final turn to transit to the Distrigas terminal on the entrance of Boston’s Mystic River. The use of explosives with sufficient force to penetrate the hull in two places 150 feet apart, and to breach the interior holding tanks, would send a torrent of liquefied gas into the water. Once it comes into contact with the warm air outside, it would start to vaporize, and ignite as a result of the fire caused by the suicide attack. The fire would burn at 3,000 degrees Fahrenheit for thirty minutes, throwing off enough heat to incinerate everything within four-tenths of a mile of the vessel. This includes steel, which melts at 2,300 degrees Fahrenheit. As recently demonstrated by the tanker fire in Oakland, California on April 30, 2007, should the burning hull drift close enough to the Tobin Bridge, it would melt the asphalt roadway and weaken the steel to the point where the bridge would have to be demolished. There also would likely be secondary fires caused by the igniting of the jet fuel storage tanks that service Logan Airport. Given the number of people living and working on Boston’s waterfront and the difficulty of quickly evacuating such a congested area, the immediate lost of life is likely to be 10,000 or more. There would be a large number of subsequent fatalities due to inadequate capacity at hospitals to treat all the burn victims.

This is a frightening scenario, but it is not one that should be used to suggest that LNG always poses an unacceptable risk to the general public. Rather it highlights that the location of an LNG facility and the transit route of the LNG tankers that dock at that facility is the critical ingredient in assessing the safety and security risk. There is no explosion or “mushroom cloud” associated with an LNG fire. Because it is stored at such an incredibly cold temperature, it is difficult to ignite liquefied natural gas. It must first spill out of the hull and turn into a vapor. Once the gas does ignite, it burns very hot but the range of the fire would be contained to under one-half a mile. Also, unlike a crude oil spill, once an LNG fire burns itself out, there would be no natural gas left over to contaminate the maritime environment.

My recommendation for preventing the hypothetical scenario I outlined for Boston Harbor is to construct a replacement LNG facility on a more remote location near the

harbor's entrance or to place it further offshore. If an LNG tanker did not need to transit within one mile of a densely populated area, it makes a far less attractive target for a suicide attack by terrorists. This is because while the fire would be spectacular to watch, the consequences would not. The human casualties would be limited only to the attackers themselves and the crew of the tanker, especially if there was a security zone set up around the ship that prohibited the boating public from getting too close to it.

This brings me to the Broadwater Facility proposal. The proposed location of the facility is 10.2 miles from Connecticut and 9.2 miles from New York. The 2 to 3 transits per week made by tankers arriving through the Race at the eastern end of Long Island Sound would not put the potential burn-radius in contact with any population center. In short, a successful attack on this facility or on the tankers traveling to this facility would not endanger the general public. As such, it can offer no real appeal to terrorists who are intent on causing mass U.S. casualties.

However, there is a different kind of security risk associated with the proposed Broadwater facility and for other LNG facilities located offshore or in remote locations. That risk is that these facilities are likely to make attractive economic targets. This will particularly be the case in the northeast and other regions as they become more dependent on natural gas for electricity. By 2010, close to 50 percent of New England's electricity will be generated by natural gas. Should the Broadwater facility be constructed as designed, it will provide nearly one-third of all the daily natural gas needs for Connecticut and Long Island. Accordingly, an attack on an unprotected LNG facility could lead to long-term blackouts or brown-outs. As such it is important to undertake stepped-up security measures to protect these facilities even if the risk of human casualties is low. This applies as well to other critical facilities within or adjacent to American waterways such as nuclear power plants and offshore mooring bases that support the offload of shipments by large oil tankers.

One potentially positive result of the surge in public interest surrounding the safety and security of new LNG facilities and shipments is that it provides an opportunity to point out the extent to which Americans are becoming increasingly dependent on energy infrastructure that must operate within a maritime and coastal environment. This dependency brings with it greater vulnerability should our adversaries choose to carry out the kinds of attacks on critical infrastructure that are becoming more commonplace in Iraq and elsewhere in the Middle East. As such the debate over LNG along with the 9/11 attacks should be a wake up call: the United States can no longer rely on the relative safety of the Atlantic and Pacific Oceans when it comes to protecting what is both valuable and vulnerable within and alongside U.S. harbors and waterways.

In the post-9/11 security environment, we must put in place on America's waterways the means to conduct something akin to community policing. This would represent a sharp departure from our current posture that relies on providing nominal resources to the U.S. Coast Guard and only token state and local harbor patrols. The Coast Guard is an agency that is roughly the size of the NYPD with responsibility for 3.36 million square miles of water and 95,000 miles of coastline. Prior to 9/11, it was already tasked with more

missions than it has resources and much of its operational assets and shore facilities are operating well beyond their design-life. Succinctly stated, for more than two decades the service has been aging, and not gracefully. As such it is in no position to provide anything more than an episodic patrol presence, even in the busiest of waterways such as Long Island Sound or the Port of New York and New Jersey. No state or community has undertaken efforts to fill this void with the exception of the relatively modest efforts by Los Angeles and the city of New York.

What is required is a national capacity to maintain a regular “cop-on-the-beat” presence in waterways proximate to critical infrastructure. Such a presence offers both a deterrent and enhances the probability of detecting a terrorist operation before it is launched. This is because an act of sabotage on a maritime facility requires a considerable amount of planning. With only one opportunity to use a suicide attacker, terrorist operatives must undertake surveillance, and conduct practice runs. If they brush up against a patrol presence as they probe a potential terrorist target, they are likely to back down because they will evaluate the risk of failure as too high. However, if they find no meaningful surveillance and interception capability in place, they will have ample opportunity to work out the details associated with their plan of attack. Once an attack is underway, it is extremely difficult to deploy a response to protect a targeted asset. This is true even during a vessel escort of an inbound LNG tanker. In a restricted waterway, there is a very limited window to detect a fast-moving boat and conclude that it poses a real threat. Even with detection, it is hard to shoot disabling fire at a fast-moving small boat from another moving vessel. In most instances, the entire detection and attempted-interception phase may be as short as 20 seconds. In short, the best opportunity to deter and detect a would-be terrorist is when they are probing a target, not when they are actually attacking it. To capitalize on that opportunity, there needs to be an ongoing patrol presence, not an episodic one.

I have examined the Coast Guard Report on Broadwater Energy LNG Proposal, released on September 21, 2006. I concur with its finding that Long Island Sound is suitable for LNG traffic and the operation of the LNG facility, but that additional measures would be necessary to responsibly manage the safety and security risks associated with this project. Specifically, there would need to be a larger ongoing patrol presence in the center of Long Island Sound to include additional Coast Guard, state, and local assets. I would add that privately maintained patrol assets could be used to augment those that are publicly maintained. I also agree with the report’s conclusion that additional firefighting resources should be available to help manage the fire risk associated with such a large and critical facility.

Frankly, the major findings of the Coast Guard’s Report on Broadwater could be extrapolated to the issue of locating LNG facilities nationwide. First, there is no serious risk to public safety as long as the facility and the vessels that transit to them are at least one mile away from a population center. Second, the security risk connected with terrorists potentially attacking these facilities is a manageable one as long as there are enough patrol assets available to routinely monitor the maritime environment in proximity to these and other critical maritime assets. Managing the risk will require a

new commitment in resources at the federal, state, and local levels. Specifically, I would recommend that the federal government undertake a maritime version of the U.S. Department of Justice's Community Oriented Policing Services (COPS) program to bolster the capacity of state and local law enforcement agencies to hire additional police officers and procure and maintain small boats to support an enhanced presence to safeguard the safety and security of America's waterways.

Let me conclude by offering a final caution. It is important that coastal states and communities around the United States actively work to find ways to manage the risk associated with LNG facilities as opposed to reflexively engage in a fight to oppose them. I worry that the NIMBY impulse that is so strong here in the Northeast and also along the California coast will leave the country in a situation where virtually all the new LNG infrastructure will be concentrated in the Gulf of Mexico and along the Gulf Coast. This is a serious problem as Hurricanes Katrina and Rita demonstrated. After those two storms, gas markets lost ten percent of their capacity nationwide in the last four months of 2005 leading to soaring natural gas prices that hit New Englanders particularly hard. Beyond the pocketbook issues, with a growing part of our electrical grid becoming more dependent on power plants fueled by natural gas, future powerful hurricanes in the Gulf may result in the lights literally going out for large sections of the nation. Current climate change projections indicate that the 100-year storm will be a 10-year storm by 2050. This translates into the Gulf region becoming an increasingly risky place to concentrate so much of the nation's energy infrastructure. Accordingly, it behooves us to have adequate geographic dispersion of the LNG infrastructure.

Thank you and I look forward to responding to your questions.

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Stephen Flynn is the author of *The Edge of Disaster: Rebuilding a Resilient Nation* (Random House, 2007) and the critically acclaimed and national bestseller, *America the Vulnerable*. Dr. Flynn is the inaugural occupant of the Jeane J. Kirkpatrick Chair in National Security Studies at the Council on Foreign Relations and is a Consulting Professor at the Center of International Security and Cooperation at Stanford University. He ranks among the world's most widely cited experts on homeland security issues, including providing congressional testimony on eighteen occasions since 9/11. He spent twenty years as a commissioned officer in the U.S. Coast Guard, retiring at the rank of Commander. During his time on active duty he had two commands at sea, served in the White House Military Office during the George H.W. Bush administration, and was director for Global Issues on the National Security Council staff during the Clinton administration. He holds a Ph.D. and M.A.L.D. from the Fletcher School of Law and Diplomacy and a B.S. from the U.S. Coast Guard Academy.

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*Stephen Flynn is the author of The Edge of Disaster: Rebuilding a Resilient Nation (Random House, 2007). He is the inaugural occupant of the Jeane J. Kirkpatrick Chair in National Security Studies at the Council on Foreign Relations. Dr. Flynn served as Director and principal author for the task force report "America: Still Unprepared—Still in Danger," co-chaired by former Senators Gary Hart and Warren Rudman. Since 9/11 he has provided congressional testimony on homeland security matters on seventeen occasions. He spent twenty years as a commissioned officer in the U.S. Coast Guard including two commands at sea, served in the White House Military Office during the George H.W. Bush administration, and was director for Global Issues on the National Security Council staff during the Clinton administration. He holds a Ph.D. and M.A.L.D. from the Fletcher School of Law and Diplomacy and a B.S. from the U.S. Coast Guard Academy.*



**TESTIMONY BY  
BROOKHAVEN TOWN  
SUPERVISOR BRIAN X. FOLEY  
BEFORE THE HOUSE SUBCOMMITTEE  
ON THE COAST GUARD AND  
MARITIME TRANSPORTATION**

Thank you for conducting this subcommittee hearing at Brookhaven Town Hall. My name is Brian Foley and I am the Supervisor of the Town of Brookhaven. As Supervisor and a member of the Town Board, I represent the almost ½ million residents of the Town. Today, I wish to express the Town's grave concerns with the safety and security issues surrounding the liquefied natural gas tankers and LNG barge Broadwater proposes for the Long Island Sound.

The north shore of our Town has miles of precious coastline and acres of embayments, including fish habitats and wetlands feeding into the Long Island Sound, which has been declared by Congress to be an Estuary of National Significance. The residents of the Town of Brookhaven are proud of our rich maritime heritage.

Our concerns with the Broadwater proposal were heightened by the forthright admission in the U.S. Coast Guard Long Island Sound Waterways Suitability Report, which I quote in pertinent part:

“The Coast Guard...does not have the resources required to implement the measures which [are] necessary to manage effectively the potential risks of navigation safety and maritime security.”

The Coast Guard went on to note:

“Local law enforcement agencies could potentially assist with some of the ...measures for managing potential risk. [We] recognize that local government does not have the necessary personnel, training or equipment.”

The Town presumably is one of the local agencies the Coast Guard would rely upon to assist with managing risk. The Town does not have those resources. Frankly, the Town should not be expected to provide security for an international corporate venture. Further, the Town of Brookhaven's taxpayers should not be expected to perform homeland security functions in the face of terror attacks. If the Coast Guard does not have the resources to protect us, the Broadwater project should be rejected for that reason alone.

The Town's safety concerns were further heightened upon release of the recent GAO Report, which highlighted additional safety issues which have yet to be studied by the Department of Energy. The GAO Report also emphasized the disagreement among experts with the conclusions reached in the Sandia Report. The Sandia Report is the basis for the safety conclusions in Broadwater's DEIS and the Coast Guard Report.

Of significant concern to the Town are the experts cited in the GAO Report who disagreed with the Sandia Report's conclusion that the distance of 1 mile protected human beings from burns resulting from an LNG fire. A quarter of the experts contacted by the GAO believed this 1 mile assumption too small a distance and that burns might occur at a greater distance. At a minimum, this issue should be studied, particularly since the Race, the entrance to the Long Island Sound and a prime area for fishermen and boaters from our Town, is only 1 ½ miles wide in some areas; too close for comfort, way too close for comfort.

Further, we understand the GAO is conducting further studies on the potential impact of fires on marine life and on the Coast Guard's ability to provide security. These studies likely will not be completed until after the scheduled issuance of the Broadwater FEIS, a situation this committee should address.

Finally, this subcommittee should note that the Broadwater DEIS suggests two general areas which Broadwater is considering for its onshore support and launching facilities. One of those areas is Port Jefferson. No where in the DEIS or the Coast Guard Report are the safety and security issues related to such a support facility analyzed or even discussed.

In short, the safety issues raised by LNG tankers and facilities have not been studied sufficiently to consider placement of the LNG barge in an Estuary of National Significance such as the Long Island Sound. We suggest that Congress act to prevent further action by FERC on the Broadwater application until the GAO studies are completed and an analysis of the security impacts of the potential Port Jefferson launching facility is concluded.

Finally, we must emphasize that in no way should FERC or Broadwater expect local government to bear the burden of Broadwater's security.

Thank you.

United States Government Accountability Office

**GAO**

Testimony  
Before the Subcommittee on Coast Guard  
and Maritime Transportation, Committee  
on Transportation and Infrastructure,  
House of Representatives

For Release on Delivery  
Expected at 10:00 a.m. EDT  
Monday, May 7, 2007

## MARITIME SECURITY

### Opportunities Exist to Further Clarify the Consequences of a Liquefied Natural Gas Tanker Spill

Statement of Mark Gaffigan, Acting Director  
Natural Resources and Environment



May 2007

## MARITIME SECURITY

## Opportunities Exist to Further Clarify the Consequences of a Liquefied Natural Gas Tanker Spill



Highlights of GAO-07-840T, testimony before the Subcommittee on Coast Guard and Maritime Transportation, Committee on Transportation and Infrastructure, House of Representatives

### Why GAO Did This Study

Liquefied natural gas (LNG) is a supercooled liquid form of natural gas. U.S. LNG imports are projected to increase to about 17 percent of natural gas supplies by 2030, from about 3 percent today. To meet this increase, energy companies have submitted 32 applications for new terminals. If a terrorist attack on an LNG tanker caused a spill, potential hazards, such as fire, asphyxiation, and explosions, could result. The Department of Energy (DOE) recently funded a study to conduct small- and large-scale experiments to refine and validate models that calculate how heat from large LNG fires would affect the public.

This testimony is based on GAO's report, *Maritime Security: Public Safety Consequences of a Terrorist Attack on a Tanker Carrying Liquefied Natural Gas Need Clarification* (GAO-07-316). To prepare this report, GAO examined the results of six recent studies on the effects of an LNG spill and convened a panel of 19 experts to identify areas of agreement on the consequences of a terrorist attack on an LNG tanker.

### What GAO Recommends

GAO recommended that DOE incorporate the key issues GAO's expert panel identified, particularly the potential for cascading failure, into its current LNG study. DOE concurred with this recommendation.

[www.gao.gov/cgi-bin/getrpt?GAO-07-840T](http://www.gao.gov/cgi-bin/getrpt?GAO-07-840T).

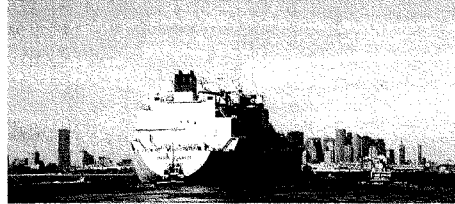
To view the full product, including the scope and methodology, click on the link above. For more information, contact Mark Gaffigan at (202) 512-3841 or [gaffiganm@gao.gov](mailto:gaffiganm@gao.gov).

### What GAO Found

The six studies GAO reviewed examining the potential effect of a fire resulting from an LNG spill produced varying results; some studies also examined other potential hazards of a large LNG spill and reached consistent conclusions on explosions. Specifically, the studies' conclusions about the distance at which 30 seconds of exposure to the heat (heat hazard) could burn people ranged from less than 1/3 of a mile to about 1-1/4 miles. Sandia National Laboratories (Sandia) conducted one of the studies and concluded, based on its analysis of multiple attack scenarios, that a good estimate of the heat hazard distance would be about 1 mile. Federal agencies use this conclusion to assess proposals for new LNG import terminals. The variations among the studies occurred because, with no data on large spills from actual events, researchers had to make numerous modeling assumptions to scale up the existing experimental data for large LNG spills. Three studies considered LNG vapor explosions and concluded that such explosions are unlikely unless the vapors were in a confined space. Only the Sandia study examined the potential for the sequential failure of multiple tanks on the LNG vessel (cascading failure) and concluded that only three of the five tanks in a typical tanker would potentially be affected, and that such failure would increase the duration of the LNG fire.

GAO's expert panel generally agreed on the public safety impact of an LNG spill caused by a terrorist attack, disagreed on specific conclusions of the Sandia study, and suggested future research priorities. Experts agreed that the most likely public safety impact of an LNG spill is the heat impact of a fire and that explosions are not likely to occur unless LNG vapors are in confined spaces. However, the experts did not all agree with the heat hazard and cascading failure conclusions reached by the Sandia study. Finally, they suggested priorities to guide future research aimed at clarifying uncertainties about heat impact distances and cascading failure. DOE's recently funded study involving large-scale LNG fire experiments addresses only some of the research priorities the expert panel identified.

LNG Tanker Passing Downtown Boston on Its Way to Port



Source: GAO



Mr. Chairman and Members of the Subcommittee:

I am pleased to be here to discuss the results of our report on the public safety consequences of a terrorist attack on a tanker carrying liquefied natural gas (LNG).<sup>1</sup> As you know, LNG is a supercooled liquid form of natural gas, which, if spilled, poses potential hazards, such as fire, asphyxiation, and explosions. U.S. imports of LNG, now about 3 percent of total U.S. natural gas supplies, are projected to be about 17 percent of U.S. supplies by 2030. To meet this increased demand, energy companies have submitted 32 applications to federal regulators to build new terminals for importing LNG in 10 states and 5 offshore areas. Because of the projected increase in tankers carrying LNG to these terminals, public safety concerns have been raised, including the consequences of a terrorist attack. In light of these concerns, access to accurate information about the consequences of LNG spills is crucial for developing risk assessments for LNG siting decisions. Despite several recent modeling studies of the consequences of potential LNG spills, uncertainties remain about the risks such spills would pose to the public. One of these studies, conducted by Sandia National Laboratories (Sandia) in 2004, is used by the Coast Guard to assess the suitability of waterways for LNG tankers traveling to proposed LNG facilities. In this context, DOE has recently funded a new study that will conduct small- and large-scale LNG fire experiments to refine and validate existing models that calculate how heat from large LNG fires would affect the public.

My testimony today summarizes the results of our report. Specifically, I will (1) describe the results of recent studies on the consequences of an LNG spill and (2) identify the areas of agreement and disagreement among experts concerning the consequences of a terrorist attack on an LNG tanker. To address these issues, we examined six studies of the consequences of LNG spills. We also convened a Web-based panel of 19 experts to identify areas of agreement and disagreement on LNG spill consequence issues, including consideration of a terrorist attack.

<sup>1</sup>GAO, *Maritime Security: Public Safety Consequences of a Terrorist Attack on a Tanker Carrying Liquefied Natural Gas Need Clarification*, GAO-07-316 (Washington, D.C.: Feb. 22, 2007). This report was prepared at the request of the House Committee on Homeland Security, the House Committee on Energy and Commerce, and Representative Edward J. Markey.

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## Summary

The six studies we reviewed all examined the heat impact of an LNG fire but produced varying results; some studies also examined other potential hazards of a large LNG spill and reached consistent conclusions on explosions. Specifically, the studies' conclusions about the distance at which 30 seconds of exposure to the heat could burn people—also termed the heat impact distance—ranged from less than 1/3 of a mile to about 1-1/4 miles. These variations occurred because, with no data on large spills from actual events, researchers had to make numerous modeling assumptions to scale up the existing experimental data for large LNG spills. These assumptions involved the size of the hole in the tanker, the number of tanks that fail, the volume of LNG spilled, key LNG fire properties, and environmental conditions, such as wind and waves. Three of the studies also examined other potential hazards of an LNG spill, including LNG vapor explosions, asphyxiation, and the sequential failure of multiple tanks on the LNG vessel (cascading failure). All three studies considered LNG vapor explosions unlikely unless the vapors were in a confined space. Only the Sandia study examined asphyxiation and concluded that asphyxiation did not pose a hazard to the general public. Finally, only the Sandia study examined the potential for cascading failure of LNG tanks and concluded that only three of the five tanks on a typical LNG vessel would be involved in such an event and that this number of tanks would increase the duration of the LNG fire.

Our panel of 19 experts generally agreed on the public safety impact of an LNG spill, disagreed on specific conclusions of the Sandia study, and suggested future research priorities. Experts agreed on three main points: (1) the most likely public safety impact of an LNG spill is the heat impact of a fire; (2) explosions are not likely to occur in the wake of an LNG spill unless the LNG vapors are in confined spaces; and (3) some hazards, such as freeze burns and asphyxiation, do not pose a hazard to the public. However, the experts disagreed with a few conclusions reached by the Sandia study that the Coast Guard uses to assess the suitability of waterways for LNG tankers going to proposed LNG terminals. Specifically, all experts did not agree with the study's 1-mile estimate of heat impact distance resulting from an LNG fire: 7 of 15 thought Sandia's distance was "about right," 8 were evenly split on whether the distance was "too conservative" or "not conservative enough," and 4 did not answer this question. Experts also did not agree with the Sandia National Laboratories' conclusion that only three of the five LNG tanks on a tanker would be involved in a cascading failure. Finally, experts suggested priorities to guide future research aimed at clarifying uncertainties about heat impact distances and cascading failure, including large-scale fire experiments, large-scale LNG spill experiments on water, the potential for cascading

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failure of multiple LNG tanks, and improved modeling techniques. DOE's recently funded study involving large-scale LNG fire experiments addresses some, but not all, of the research priorities the expert panel identified.

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## Background

As scientists and the public have noted, an LNG spill could pose potential hazards. When LNG is spilled from a tanker, it forms a pool of liquid on the water. As the liquid warms and changes into natural gas, it forms a visible, foglike vapor cloud close to the water. The cloud mixes with ambient air as it continues to warm up, and eventually the natural gas disperses into the atmosphere. Under certain atmospheric conditions, however, this cloud could drift into populated areas before completely dispersing. Because an LNG vapor cloud displaces the oxygen in the air, it could potentially asphyxiate people who come into contact with it. Furthermore, like all natural gas, LNG vapors can be flammable, depending on conditions. If the LNG vapor cloud ignites, the resulting fire will burn back through the vapor cloud toward the initial spill. It will continue to burn above the LNG that has pooled on the surface—this is known as a pool fire. Small-scale experiments to date have shown that LNG fires burn hotter than oil fires of the same size. Both the cold temperatures of spilled LNG and the high temperatures of an LNG fire have the potential to significantly damage the tanker, causing a cascading failure. Such a failure could increase the severity of the incident. Finally, concerns have been raised about whether an explosion could result from an LNG spill.

The Federal Energy Regulatory Commission is responsible for approving applications for onshore LNG terminal sitings, and the U.S. Coast Guard is responsible for approving applications for offshore sitings. In addition, the Coast Guard reviews an applicant's Waterway Suitability Assessment, reaches a preliminary conclusion on whether the waterway is suitable for LNG imports, and identifies appropriate strategies that reduce the risk posed by the movement of an LNG tanker.

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## Studies Identified Different Distances for the Heat Effects of an LNG Fire, but Agreed on Other LNG Hazards

The six studies we examined identified various distances at which the heat effects of an LNG fire could be hazardous to people. The studies' results about the distance at which 30 seconds of exposure to the heat could burn people ranged from less than 1/3 of a mile (about 500 meters) to about 1-1/4 miles (more than 2,000 meters). The studies' variations in heat effects occurred because (1) different assumptions were made in the studies' models about key parameters of LNG spills and (2) the studies were designed and conducted for different purposes. Since no large-scale data



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are available for LNG spills, researchers made numerous modeling assumptions to scale up the existing experimental data for large spills. Key assumptions made included hole size and cascading failure, waves and wind, the volume of LNG spilled, and the amount of heat radiated from the fire. For example, studies made assumptions for the size of the hole in the LNG tanker that varied from less than 1 square meter up to 20 square meters. Additionally, the studies were conducted for different purposes. Two studies were academic analyses of the differences between LNG and oil spills; three specifically addressed spills caused by terrorist attacks, which was a concern in the wake of the September 11 attacks; and the final study developed appropriate methods for regulators to use to estimate heat hazards from LNG fires. Results of these studies can be found in our report.

Some studies also examined other potential hazards, such as explosions, asphyxiation, and cascading failure, and identified their potential impacts on public safety. Three studies examined the potential for LNG vapor explosions, and all agreed that it is unlikely that LNG vapors could explode if the vapors are in an unconfined space. Only one study examined the potential for asphyxiation following an LNG spill if the vapors displace the oxygen in the air. It concluded that fire hazards would be the greatest problem in most locations, but that asphyxiation could threaten the ship's crew, pilot boat crews, and emergency response personnel. Finally, only the Sandia study examined the potential for cascading failure of LNG tanks and concluded that only three of the five tanks would be involved in such an event and that this number of tanks would increase the duration of the LNG fire.

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**Experts Generally Agreed That the Most Likely Public Safety Impact of an LNG Spill Is the Heat Effect of a Fire, but That Further Study Is Needed to Clarify the Extent of This Effect**

The 19 experts on our panel generally agreed on the public safety impact of an LNG spill, disagreed with specific conclusions of the Sandia study, and suggested future research priorities.<sup>2</sup> Specifically:

- Experts agreed that the main hazard to the public from a pool fire is the heat from the fire, but emphasized that the exact hazard distance depends on site-specific weather conditions; composition of the LNG (relative percentages of methane, propane, and butane); and the size of the fire.

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<sup>2</sup> We considered experts to be "in agreement" if more than 75 percent of them indicated that they completely agreed or generally agreed with a given statement. Not all experts commented on every issue discussed.

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- Eighteen of 19 experts agreed that the ignition of a vapor cloud over a populated area could burn people and property in the immediate vicinity of the fire. Three experts emphasized in their comments that the vapor cloud is unlikely to penetrate very far into a populated area before igniting.
  - With regard to explosions, experts distinguished between explosions in confined spaces and in unconfined spaces. For confined spaces, such as under a dock or between the hulls of a ship, they agreed that it is possible, under controlled experimental conditions, to induce explosions of LNG vapors; however, a detonation—the more serious type of vapor cloud explosion—of confined LNG vapors is unlikely following an LNG spill caused by a terrorist attack. For unconfined spaces, experts were split on whether it is possible to induce such explosions under controlled experimental conditions; however, even experts who thought such explosions were possible agreed that vapor cloud explosions in unconfined spaces are unlikely to occur following an LNG spill caused by a terrorist attack.

Our panel of 19 experts disagreed with a few of the Sandia study's conclusions and agreed with the study authors' perspective on risk-based approaches to dealing with the hazards of potential LNG spills. For example:

- Seven of 15 experts thought Sandia's heat hazard distance was "about right," and the remaining 8 experts were evenly split as to whether the distance was "too conservative" (i.e., larger than needed to protect the public) or "not conservative enough" (i.e., too small to protect the public). Officials at Sandia National Laboratories and our panel of experts cautioned that the hazard distances presented cannot be applied to all sites because of the importance of site-specific factors. Additionally, two experts explained that there is no "bright line" for hazards—that is, 1,599 meters is not necessarily "dangerous," and 1,601 meters is not necessarily "safe."
- Nine of 15 experts agreed with Sandia's conclusion that only three of the five LNG tanks on a tanker would be involved in cascading failure. Five experts noted that the Sandia study did not explain how it concluded that only three tanks would be involved in cascading failure.
- Finally, experts agreed with Sandia's conclusion that consequence studies should be used to support comprehensive, risk-based management and planning approaches for identifying, preventing, and mitigating hazards from potential LNG spills.

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The experts also suggested priorities for future research—some of which are not fully addressed in DOE's ongoing LNG research—to clarify uncertainties about heat impact distances and cascading failure. These priorities include large-scale fire experiments, large-scale LNG spill experiments on water, the potential for cascading failure of multiple LNG tanks, and improved modeling techniques. As part of DOE's ongoing research, Sandia plans to conduct large-scale LNG pool fire tests, beginning with a pool size of 35 meters—the same size as the largest test conducted to date. Sandia will validate the existing 35-meter data and then conduct similar tests for pool sizes up to 100 meters. Of the top 10 LNG research priorities the experts identified, only 3 have been funded in the DOE study, and the second highest ranked priority, cascading failure, was not funded. One expert noted that although the consequences of cascading failure could be serious, because the extreme cold of spilled LNG and the high heat of an LNG fire could damage the tanker, there are virtually no data looking at how a tanker would be affected by these temperatures.

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## Conclusions

It is likely that the United States will increasingly depend on LNG to meet its demand for natural gas. Consequently, understanding and resolving the uncertainties surrounding LNG spills is critical, especially in deciding where to locate LNG facilities. While there is general agreement on the types of effects of an LNG spill, the study results have created what appears to be conflicting assessments of the specific heat consequences of such a spill. These assessments create uncertainty for regulators and the public. Additional research to resolve some key areas of uncertainty could benefit federal agencies responsible for making informed decisions when approving LNG terminals and protecting existing terminals and tankers, as well as providing reliable information to citizens concerned about public safety.

To provide the most comprehensive and accurate information for assessing the public safety risks posed by tankers transiting to proposed LNG facilities, we recommended that the Secretary of Energy ensure that DOE incorporates the key issues the expert panel identified, particularly the potential for cascading failure, into its current LNG study.

DOE concurred with our recommendation.

Mr. Chairman, this concludes my prepared statement. I would be happy to respond to any questions that you or Members of the Committee may have.

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**Contacts and  
Acknowledgments**

For further information about this testimony, please contact me at (202) 512-3841 or [gaffiganm@gao.gov](mailto:gaffiganm@gao.gov). James W. Turkett, Janice M. Poling, and Carol Herrstadt Shulman also made key contributions to this statement.

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**PREPARED STATEMENT OF**  
**JOHN HRITCKO, JR.**  
**SENIOR VICE PRESIDENT & REGIONAL PROJECT DIRECTOR**  
**BROADWATER ENERGY, LLC**  
**before the**  
**SUBCOMMITTEE ON COAST GUARD AND MARITIME TRANSPORTATION**  
**COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE**  
**UNITED STATES HOUSE OF REPRESENTATIVES**

Field Hearing on the  
Safety and Security of Liquefied Natural Gas  
Farmingville, New York

May 7, 2007

Chairman Cummings, Ranking Member LaTourette, and Member Bishop, thank you for the opportunity to appear before the Subcommittee today to testify on behalf of Broadwater Energy, LLC. My name is John Hritcko, Jr. and I am Senior Vice President and Regional Project Director of Broadwater. Broadwater is a joint venture comprised of subsidiaries of Shell Oil Company and TransCanada Corporation.

Broadwater proposes a project that would bring a new source of reliable, long-term, competitively priced natural gas supply to the Long Island, New York City, and Connecticut markets ("the Region"). Broadwater has undertaken an extensive regulatory review process at both the federal and state level lead by the Federal Energy Regulatory Commission designated as the lead agency. As part of that review, a draft Environmental Impact Statement ("DEIS") was released by FERC late last year. Incorporated into the DEIS was the Coast Guard's assessment of safety and security issues related to determining the suitability of Long Island Sound for the Broadwater project called the waterway Suitability Report. My statement today summarizes the detailed application submitted by Broadwater to FERC with emphasis upon the need for the proposed facilities, highlighting the measures to be incorporated into the project to maintain safety and security of the operations and facility, and reiterates Broadwater's commitment to safety and security without burdening the local population.

As a precursor to the topic of this field hearing, it must be noted that the Region faces enormous challenges with regard to energy. The cost of energy in general and particularly the cost of natural gas is the highest of the lower 48-states and the Region experiences dramatic upward swings during periods of peak demand on the coldest winter days when heating needs are the greatest and during the summer when electricity demands for cooling are the greatest.

Because it is the cleanest and most efficient of the fossil fuels, natural gas is currently the fuel of choice for most new electric power generation being proposed and

constructed. That choice of natural gas to fuel new power generation is driving up the demand for the product not only in the Region, but also throughout the United States.

While the Region's energy challenges are daunting, solutions are available. However, I must emphasize the point that it will take numerous solutions to address these challenges. There is no silver bullet.

To be successful is to achieve plentiful, reliable, and affordable energy. It must begin with rational, fact-based assessment leading to well-reasoned policies and a firm commitment to pursue multiple, diversified paths on how we acquire and use our energy. In the near term on the demand side, we must take steps to improve our ability to conserve and use energy more efficiently. On the supply side, we must diversify and expand the availability of energy, particularly the cleaner burning, more efficient fuels such as natural gas. Longer term, as new technologies and processes develop and become commercially viable, we can transition from our use of fossil fuels.

Broadwater is supply-side proposal seeking to deliver a large new, diversified supply of natural gas directly into the Region. This would be accomplished by siting, constructing and operating an LNG marine import and regasification terminal in the Long Island Sound which will be connected to an existing natural gas pipeline serving the Region. The natural gas would be transported and delivered to the Broadwater terminal as a liquid by specially designed ocean going ships (called "LNG carriers"). The LNG would be transferred from the carriers to Broadwater, slowly warmed back into a gas, and delivered into the pipeline over a number of days.

The proposed Broadwater terminal will consist of a floating storage and regasification unit (the "FSRU"), essentially an LNG carrier without propulsion that is approximately 1,215 feet long and 200 feet wide and rises approximately 80 feet above the water line to the trunk deck. The FSRU's draft is approximately 40 feet. The FSRU will be designed to accommodate net storage of approximately 350,000 cubic meters (equivalent to 2.2 million barrels of LNG or 8.0 Bcf of regasified LNG) of LNG in eight membrane-type LNG storage tanks, with base regasification capabilities of 1.0 Bcf per day using a closed-loop shell and tube vaporization system. It will be capable of delivering a peak sendout of 1.25 Bcf per day. The LNG will be delivered to the FSRU in LNG carriers with cargo capacities ranging from 125,000 cubic meters to a potential future size of 250,000 cubic meters at a frequency of two to three carriers per week. (See a depiction of the FSRU on Exhibit A.)

The FSRU will be moored in place by a yoke mooring system ("YMS"). The YMS will be attached to a tower, which in turn, will be secured to the seafloor by four legs having a diameter of 6.9 feet spaced 115 feet apart and embedded approximately 230 feet into the seabed. The tower will provide a secure mooring for the FSRU as well as support the initial portion of the 30-inch lateral pipeline that will connect with the FSRU to the interstate market. The pipeline lateral will proceed in a southwesterly direction from the FSRU for 22 miles to a sub-sea interconnect with the existing Iroquois Gas



Transmission System (“Iroquois”) where it will be delivered into the interstate grid serving the Region. (See a depiction of the mooring tower on Exhibit B.)

The location of the proposed Broadwater terminal is in the Long Island Sound, in a water depth of about 90 feet, approximately nine miles off the coast of Riverhead, Suffolk County, New York. The nearest Connecticut onshore point is approximately 10.2 miles from the proposed terminal location. A map of the proposed facilities is attached as Exhibit C.

The siting of the facility was determined based upon a comprehensive and iterative process that evaluated potential terminal design concepts (e.g., traditional onshore facilities with offshore pier, GBS, floating, shuttle, etc.) and sites throughout the entire Long Island region, including both onshore and offshore locations. This siting process evaluated potential sites against a wide range of environmental and socioeconomic criteria. Key among these was: (i) the distance of the terminal from shore to enhance public safety and minimize visual and noise impacts (Two images, one from the New York shoreline and one from the Connecticut shoreline, developed for Broadwater’s view shed analysis and included in the FERC application are attached as Exhibits D and E.); (ii) the length of the connecting subsea pipeline; (iii) minimizing impacts on fishing, boating, and shipping routes; and (iv) avoiding subsea hazards and impacts. The process and analysis is fully detailed in Broadwater’s application filed with the Federal Energy Regulatory Commission.

The economic benefits of having 1.0 Bcf per day of natural gas delivered directly into the Region by Broadwater are extremely compelling. Broadwater estimates that wholesale energy savings to the Region would total nearly \$10 billion over the life of the project. This savings translates into approximately \$680 million per year during the first years of service. Breaking that annual savings down to an average residential consumer, Broadwater would provide approximately \$300 to \$400 per year in direct and indirect energy cost savings for the average household in the Region. Beyond the economic benefits, Broadwater would provide a substantial amount of natural gas that could greatly assist in helping New York and Connecticut meet their clean air requirements as well as climate change goals under the Regional Greenhouse Gas Initiative. (For reference, a diagram depicting the natural gas pipelines in the Region is shown on Exhibit F.)

The safety and security of the adjacent communities, other users of the Sound, and the facility is of the highest priority to Broadwater. Key aspects of Broadwater’s safety controls and security measures are detailed in the FERC application. Incorporated within the design of the facility is a layered approach to the safety of operations. The FSRU will be designed to withstand severe weather conditions and natural catastrophes. Although the Broadwater terminal may be among the first FSRU’s in operation, it does not rely on new technologies. The FSRU consists of three main components, all of which utilize existing and proven technology: (i) Hull and Containment, which uses existing LNG carrier technology; (ii) Process Equipment, which employs the same types of vaporization and utilities equipment in use at onshore terminals; and (iii) a YMS that has been used for many years in open-water conditions for the mooring of Floating

Production Storage Offloading Vessels. Because the proposed project does not rely on new technology, Broadwater has been able to develop safety and security measures that are proven and in use today.

The main safety features of the FSRU design are:

**Proven Technology:** As noted above, the Hull and Containment System incorporates the same features as an LNG carrier and will be designed and constructed in accordance with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (“IGC code”) and other International Marine codes and regulations and in compliance with Classification Society Rules. These standards result in a hull design that minimizes the potential for an accidental release of LNG.

**Collision Avoidance:** The FSRU will be equipped with a complete suite of communications equipment and navigational aids (including radar systems, a radar beacon and navigational aids) in accordance with USCG requirements to alert other ships of the presence of the facility.

**LNG Spill Containment from Unloading and Process Areas:** Broadwater will employ a spill containment strategy to avoid or minimize the potential for gas cloud accumulation fires or explosions. Major LNG spills will be directed safely overboard into the sea, where the majority of the LNG will vaporize on the water surface, well away from the deck facility. In addition, the project will adopt measures for leak prevention, and will employ an emergency shutdown system for detection, isolation, shutdown, and depressurization systems to minimize potential spill sizes.

**Safety and Security Zone:** The location of the FSRU is significantly distant from populated areas. In fact, the Coast Guard assessment of Broadwater’s location reported in Section 8.2 Key Points of the Waterway Suitability Report stated, “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 associated with its remoteness, especially with respect to threat and consequence since it would be remote from population centers.” The WSR further prescribed a safety/security zone around the FSRU of 1,210 yards in radius centered on the mooring tower. The purpose of a safety and security zone is to reduce the risks to the public by limiting access to the areas of highest consequence in the unlikely event of an LNG fire and to provide a security perimeter to protect the FSRU and the LNG carriers. It noted that this safety/security zone for the FSRU would cover approximately 0.12% of the total area of Long Island Sound.

**Hazard Detection:** The facility hazard detection system will be in accordance with the requirements of NFPA 59A, Classification Society Rules and IGC Code requirements.

**Fire Suppression:** The facility will have specific fire protection systems for the different areas of the facility. Fire extinguishing systems will be provided in accordance with Classification Society Rules and IGC Code requirements. It was noted in the WSR that

marine firefighting resources would be required to mitigate fire risks associated with the proposed project and that existing marine firefighting capability in Long Island Sound is inadequate. Broadwater fully agrees with that assessment, which is why we stated on the day we first announced the project that Broadwater would acquire and maintain its own, dedicated fleet of firefighting tugs to protect the facility.

**Emergency Shutdown:** A loss of electrical power will not compromise the safety and security of the facility. In the unlikely event of a total power failure, an emergency generator will start automatically. This generator is designed to maintain critical facility systems until such time as normal power generation can be resumed.

**Emergency Response:** Fire-fighting and life-saving arrangements on board the FSRU will comply with the Safety of Life at Sea (“SOLAS”) Convention supplemented by the IGC Code. The WSR also included a recommendation that Broadwater develop and submit to FERC and the Coast Guard a process for developing the Emergency Response Plan required by Section 311 of the Energy Policy Act of 2005. This plan would have to be approved by FERC before Broadwater could receive approval to begin construction of the facility. The WSR noted that the plan should be developed through a transparent, public process that actively involves the Coast Guard and appropriate agencies and key officials of state and local governments including New York, Connecticut and Rhode Island. Broadwater has developed the process it proposes to use in creating the Emergency response Plan and has made preliminary contacts with various fire responders and agencies on both sides of the Sound. We anticipate that the process of developing the preliminary Emergency Response Plan will extend through this year, but the plan will be a living document subject to update as the project is designed, constructed and commences operation. Broadwater is also required to prepare and submit an Operations Manual and an Emergency Manual to the Captain of the Port Long Island Sound for review and approval at least six months but no more than twelve months before the FSRU would receive LNG deliveries. These manuals must include the applicable requirements stipulated on the facility license and shall be consistent with the facility’s Emergency Response Plan.

Regarding the security of the FSRU, Broadwater understands the vital importance of security review since the events of September 11, 2001, and has fully committed to undertake a thorough terrorism threat assessment and consequence analysis as a fundamental and continuing responsibility. Integral to this assessment and analysis process is full coordination with all federal and state government agencies charged with the development of threat intelligence information and the development of consequence management modeling and planning. The Broadwater application filed with FERC describes the methodologies that will be used to determine potential threats, the consequences of a successful threat, the security design features and security operating procedures necessary to minimize potential hazards to the public. Detailed security vulnerability analyses and mitigating strategies, including specific security design features and security operating procedures, are being discussed with the appropriate regulatory agencies. As with the Emergency Response Plan, Broadwater must submit a security plan for review and approval of the Coast Guard Captain of the Port Long Island

Sound at least six months but no more than twelve months before the FSRU would receive LNG deliveries.

The cost sharing issues identified in the WSR and the FERC DEIS require the development of a Cost-Sharing Plan identifying the mechanisms for funding all Project-specific security/emergency management costs that would be imposed on state and local agencies. In addition to the funding of direct transit-related security/emergency management costs, this comprehensive plan shall include funding mechanisms for the capital costs associated with any necessary security/emergency management equipment and personnel base. The Cost-Sharing Plan must be filed by Broadwater with the Secretary for review and written approval by the Director of Office of Energy Projects prior to any Project-related construction activity.

Broadwater will meet the requirements outlined by FERC and the USCG and would like to assure this Subcommittee and the public that we have already made provisions within our preliminary budget estimates of these requirements to ensure the burden for protecting the facility and responding in the event of an emergency is carried by the project itself. For example, it has been stated that Broadwater will provide the necessary fire fighting tugs as well as security personnel to protect the facility. The project recognizes that local first responders and communities do not have the capability to respond to an incident at the facility nor would we call upon the resources of shoreline communities. At a minimum, however, we fully expect to establish communications plans and protocols with the appropriate agencies or departments so that necessary coordination and interoperability between Broadwater and these various parties is established. Broadwater is also committed to ensuring that these parties are involved, to the extent that they are willing, in the development of the Emergency Response Plan and security procedures.

In closing, I would like to emphasize Broadwater's commitment to stakeholder engagement. Since announcing this project in November 2004, the project has strived to reach out to as many Long Island and Connecticut groups and individuals as possible. We have taken much of the feedback and incorporated it into the development of the project so that the benefits of the facility are maximized and the impacts are avoided or minimized. We will continue to meet with interested groups and individuals and have seen a growing level of understanding about the project and its role in addressing the Region's energy and environmental challenges.

Thank You.

*Congressional Hearing Testimony  
Riverhead Town Fire Marshal  
May 7<sup>th</sup> 2007 – Brookhaven Town Hall*

Good morning distinguished members of the Congressional Subcommittee on Coast Guard and Maritime Transportation.

My name is Bruce Johnson and I'm the Fire Marshal for the Town of Riverhead. I appreciate the opportunity to testify today before this distinguished Congressional Committee as you review public safety concerns related to LNG Safety and Broadwater Energy's proposal for an LNG Storage and regasification facility (FSRU – Floating Storage and regasification Unit) to be located in the Long Island Sound. For the record, my professional qualifications include being Riverhead Town Fire Marshal since April 1998 and I have over 25 years experience as a volunteer firefighter. I have a Bachelor of Science Degree in Fire Service Administration and a Masters degree in Business Administration. I hold numerous certifications as a building and fire code enforcement official. I am a nationally certified fire investigator and nationally certified fire instructor. I have been a Deputy Chief Fire Instructor for the Suffolk County Fire Academy for over eight years. I am also an Adjunct Instructor at SUNY-Empire State College, teaching upper-level Fire Science and Emergency Management courses for the past nine years. Most recently, I participated in the Coast Guard PAWSA (Port and Waterway Safety Assessment) for the Long Island Sound.

As part of my comments here today, I would like to reference two important documents that are relevant to these proceedings. First is the Coast Guard *Waterway Suitability Assessment* ("WSA") report. The second is the *Fire Service Guidance for Participating in LNG Terminal Evaluation, Siting and Operations*, which was prepared for the National Association of State Fire Marshals, January 31, 2007. A copy of the latter report has been furnished to this committee along with my written testimony.

As the Federal Energy Regulatory Commission “FERC” continues its review of the Broadwater Energy Project, local, county and state fire, police and emergency management officials from New York, Connecticut and Rhode Island must now continue the work began by the Coast Guard (detailed in the WSA released in September 2006) with regard to safety and security assessment. Working in close cooperation with the Coast Guard, FERC and Broadwater Energy, the local, county and state emergency first responders must address their agency’s safety and security concerns and identify the appropriate resources that will be necessary to mitigate and/or manage all the identified hazards and risks. Unfortunately, this process will be a time consuming one. Until local, county and state emergency first responders have completed their due diligence safety and security analysis, I don’t believe we can competently answer the safety questions presently in the minds of this subcommittee, the public or our elected officials,

Many public comments have focused on the possibility of a catastrophic fire event, either accidental or deliberate, as the primary hazard related to this project. This is certainly an area of concern to all emergency first responders from New York, Connecticut, Rhode Island and the Coast Guard. However, there are numerous other potential hazards that have been identified and analyzed in the WSA. Local, county and state emergency responders must now participate in the process of evaluating the proposed mitigation and risk management strategies and evaluate the availability and capability of their agency resources. This not only includes fire events, but other emergencies that may trigger the response of local, county or state Fire, EMS, Rescue, Haz-Mat or Police resources,

Most, if not all, of the local, county and state emergency responders presently have had little training or experience with LNG storage and regassification or the Broadwater proposal for an FSRU. We are only beginning to acquire the knowledge needed to competently understand the WSA and the hazards and risk analysis required for the development of a comprehensive Emergency Response Plan that is necessitated by the placement of the Broadwater Energy project within our emergency response jurisdiction.

Therefore, it is my recommendation that over the next several months, the Coast Guard and Broadwater Energy begin the task of identifying ALL the emergency response agencies that have jurisdictional responsibility for public safety and could conceivably be first responders to any incident related to the Broadwater facility or its supporting operations. It is critical that all emergency response stakeholders be identified and provided the opportunity to participate in the hazard and risk mitigation and response planning *process*. Each agency will need to commit a responsible agency representative to participate in a **Safety, Security and Emergency Management Planning and Response Task Group** that will most likely require 18 months to first complete an education process in LNG and then work with the Coast Guard, FERC and Broadwater to address mitigation and response strategies and draft an Emergency Response Plan.

It should not be the responsibility of this Task Group to render a policy position in favor or opposition to the Broadwater proposal. Their mission should be a due diligence safety analysis based on fire and emergency management best practices and regulations such as those outlined in: section 311 of the Federal Energy Policy Act of 2005; the NASFM LNG Guidance document; SIGTTO Liquefied Gas Fire Hazard Management document; the “Sandia” report and NFPA 471, 472 and 1600 and other appropriate resources.

Under guidance from the Coast Guard, FERC and Broadwater Energy need to be active participants in this Task Group process along with all emergency responders for several reasons;

1. To share their expertise and experience with LNG transportation, storage and regassification
2. To provide engineering analysis specific to the Broadwater Energy project; as this project is a hybrid – neither ship nor fixed location facility
3. To provide access to experts such as Fire Protection Engineers specializing in LNG Facilities and/or Educational Institutions such as Texas A & M University who have on-going fire research programs pertaining to LNG

4. To provide access to Facility Operators and Emergency Responders responsible for currently operating LNG Storage and regassification facilities such as those operating at Everett, Massachusetts or Cove Point, Maryland
5. Broadwater, as the proposal applicant, should be responsible to pay reasonable costs associated with the work of this Safety, Security and Emergency Management Planning and Response Task Group as related to education, training and/or site visits.

As the final step following this safety and security analysis, with guidance from the Coast Guard and FERC, this Task Group should be given the responsibility of conducting the review of currently available emergency response personnel and equipment capabilities. This will allow for a determination of what additional emergency response equipment, personnel and/or specialized emergency responder training that will be necessary if the proposed Broadwater LNG project is sited in the Long Island Sound. This will be a critical component in the final report because it will provide the comprehensive inventory of currently available resources and personnel from municipalities in three states. If, after inventorying currently available assets, it is determined that additional local, county or state special equipment, resources, personnel and/or training are necessary, the appropriate regulatory agencies can determine how those resources will be provided and who should bear the associated costs.

In conclusion, there is still much work to be done before the questions about how to best mitigate and/or manage safety and security risks for this proposed LNG facility can be answered. Likewise, we are not presently able to determine what additional resources may be needed at the local, county or state level nor the estimated their cost. I hope that following this hearing, the work necessary to form the recommended Safety, Security and Emergency Management Planning and Response Task Group will begin and that ALL agencies will participate through commitment of the appropriate agency representative in this important safety and security planning process.



The completion of work by this Task Group will provide the draft comprehensive emergency response plan and the ability to answer the many questions in the minds of the public and the members of this distinguished Congressional Subcommittee.

Thank you for allowing me to participate in today's Hearing.

COUNTY OF SUFFOLK



OFFICE OF THE COUNTY EXECUTIVE

Steve Levy  
COUNTY EXECUTIVE

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## TESTIMONY ON BROADWATER LNG FACILITY

SUFFOLK COUNTY EXECUTIVE STEVE LEVY  
MAY 7, 2007

THANK YOU FOR THE OPPORTUNITY TO SPEAK HERE THIS EVENING BROADWATER LIQUID NATURAL GAS FACILITY PROPOSED TO BE SITED IN THE LONG ISLAND SOUND.

AS COUNTY EXECUTIVE, I AM EXTREMELY CONCERNED WITH THE INTRUSION OF THE BROADWATER FACILITY IN SUFFOLK COUNTY WATERS IN THE LONG ISLAND SOUND. BROADWATER'S FLOATING STORAGE REGASIFICATION UNIT IS AN ENORMOUS FACILITY WHICH BROADWATER PROPOSES TO PERMANENTLY PLACE IN THE SOUND FOR MORE THAN 30 YEARS. THE LARGE RE-FUELING VESSELS THAT WILL TRANSPORT THE LIQUID NATURAL GAS ("LNG") FROM FOREIGN PORTS TO THE FLOATING FACILITY AND UNLOAD THE LNG WILL FORM A CONTINUOUS PARADE OF LARGE VESSELS THAT WILL TRAVEL THROUGH THE SOUND TO AND FROM THE BROADWATER FACILITY EVERY TWO TO THREE DAYS FOR YEARS TO COME.

BROADWATER ADMITS THAT THIS WOULD INVOLVE AT LEAST 312 TANKER TRIPS PER YEAR THROUGH OUR PRECIOUS LONG ISLAND SOUND. AS CHIEF EXECUTIVE OF SUFFOLK COUNTY, I CANNOT STATE STRONGLY ENOUGH THAT THIS IS AN INTOLERABLE BURDEN ON OUR RESIDENTS AND OTHERS WHO UTILIZE THE SOUND FOR MARITIME COMMERCIAL ACTIVITIES INCLUDING FISHING, LOBSTERING, AND TRANS-SOUND TRANSPORTATION.

EQUALLY IMPORTANT IS THE IMPACT BROADWATER WOULD HAVE ON RECREATIONAL USERS OF THE SOUND, WHICH IS A LIFEblood FOR THE 8 MILLION RESIDENTS WHO RESIDE ON BOTH COASTS OF THE

SOUND AND THE HUNDREDS OF THOUSANDS OF TOURISTS WHO VISIT OUR SHORES EACH YEAR. THESE INDIVIDUALS USE THE SOUND THROUGHOUT THE YEAR FOR BOATING, SWIMMING, FISHING, SAILING, AND OTHER AQUATIC-RELATED ACTIVITIES. APPROXIMATELY 1,000 ACRES OF THE SOUND WILL SUDDENLY BE PERMANENTLY OFF LIMITS TO EVERY OTHER USER OF THE SOUND EXCEPT BROADWATER BECAUSE THAT IS THE EXCLUSION ZONE MANDATED BY THE COAST GUARD AROUND THE FLOATING FACILITY.

IN ADDITION, EACH OF THE SUPPLY TANKERS WILL HAVE A 1,722 ACRE EXCLUSION ZONE AROUND IT AS IT TRAVELS THROUGH THE SOUND TO AND FROM THE FSRU. WE HAVE ALL SEEN PICTORIAL REPRESENTATIONS OF THIS MONSTROSITY AND NO ONE CAN CLAIM THAT IT IS A VALUABLE ADDITION TO THE SOUND. I USE THE TERM PICTORIAL REPRESENTATION BECAUSE THIS TYPE OF FACILITY HAS NEVER BEEN BUILT ANYWHERE ELSE IN THE WORLD AND BROADWATER WANTS OUR LONG ISLAND SOUND TO BE HOME TO THIS UNPROVEN AND EXPERIMENTAL TECHNOLOGY.

LONG ISLAND SOUND IS AN EXCEPTIONAL WATER BODY, THE PRESERVATION OF WHICH HAS BEEN AND CONTINUES TO BE A PRIME FOCUS OF THE FEDERAL GOVERNMENT, THE GOVERNMENTS OF THE STATES OF NEW YORK AND CONNECTICUT, SUFFOLK COUNTY GOVERNMENT, AND LOCAL MUNICIPAL GOVERNMENTS. IT HAS BEEN DESIGNATED AN ESTUARY OF NATIONAL SIGNIFICANCE BY THE FEDERAL GOVERNMENT.

IN 2006, IN THE LONG ISLAND STEWARDSHIP ACT, THE FEDERAL GOVERNMENT SPECIFICALLY ACKNOWLEDGED THAT THE LONG ISLAND SOUND IS "A NATIONAL TREASURE OF GREAT CULTURAL, ENVIRONMENTAL AND ECOLOGICAL IMPORTANCE" WORTHY OF PROTECTION AND WORTHY OF THE HUNDREDS OF MILLIONS OF DOLLARS TO CLEAN IT UP AND TO RESTORE IT SO THAT THE PUBLIC CAN ENJOY AND UTILIZE IT. THAT 2006 FEDERAL ACT FURTHER NOTED THAT THE SOUND CONTRIBUTES MORE THAN \$5 BILLION TO THE REGIONAL ECONOMY. AN APPROVAL OF BROADWATER BY FERC CONTRAVENES THESE FEDERAL POLICIES REGARDING LONG ISLAND SOUND.

THE FEDERAL GOVERNMENT AND OUR OWN STATE DEPARTMENT OF STATE, IN EXERCISING THEIR COASTAL ZONE AUTHORITY, RECOGNIZE THE UNIQUE CHARACTER OF THE LONG ISLAND SOUND FOR APPROPRIATE AND COMPATIBLE RECREATIONAL AND MARITIME COMMERCE. INTO THIS TRANQUIL SCENE, BROADWATER SEEKS TO PERMANENTLY PLUNGE ITS MASSIVE FLOATING GAS FACILITY. IT WILL

CREATE AN UNACCEPTABLE INDUSTRIALIZATION OF THE SOUND, ONE THAT VIOLATES THE CENTURIES-OLD DOCTRINE KNOWN AS THE PUBLIC TRUST DOCTRINE WHICH HOLDS THAT THE SOUND AND OTHER SIMILAR BODIES OF WATER ARE HELD IN TRUST FOR THE USE AND ENJOYMENT OF THE PEOPLE OF NEW YORK STATE AND NOT FOR THE USE AND EXPLOITATION BY A PRIVATE COMPANY.

AS YOU KNOW, SUFFOLK COUNTY IS SO ADAMANTLY OPPOSED TO BROADWATER THAT IT PASSED A LAW BANNING SUCH LNG FACILITIES. THIS LAW WAS NOT LIGHTLY ENACTED AND IS BASED UPON A SERIOUS AND THOROUGH EVALUATION OF THE RISKS AND BENEFITS OF SUCH A PROPOSAL, AND THE RISKS OVERWHELM AND OUTWEIGH THE BENEFITS. I ALSO NOTE THAT OUR LAW WAS BASED UPON NEW YORK STATE STATUTES THAT GIVE SUFFOLK COUNTY COMPLETE AUTHORITY AND JURISDICTION TO REGULATE THE USE OF LONG ISLAND SOUND TO THE CONNECTICUT BORDER TO THE NORTH AND TO NASSAU COUNTY TO THE WEST.

ALL OF THIS IS BEING THRUST UPON THE RESIDENTS OF SUFFOLK COUNTY AND UPON OUR NEIGHBORS IN CONNECTICUT FOR A RUMORED 15% OF THE GAS DELIVERED TO THE FACILITY. THERE IS NO INFORMATION IN THE RECORD THAT CLEARLY DEMONSTRATES THAT ANY OF THE LNG DELIVERED TO BROADWATER WOULD BE USED ON LONG ISLAND. HOWEVER, EVEN IF THAT 15% IS TRUE, IT STILL DOES NOT WARRANT THE HUGE RISKS AND PROBLEMS THAT BROADWATER WOULD BRING TO OUR SHORES. THERE ARE OTHER PIPELINES AND LNG FACILITIES APPROVED OR IN THE APPROVAL PROCESS THAT MAKE BROADWATER UNNECESSARY.

THE COUNTY ALSO HAS CONCERNS ABOUT THE SAFETY OF THIS PROPOSED FACILITY. FIRST, THE COAST GUARD, IN A VERY DETAILED REPORT THAT IT ISSUED IN SEPTEMBER 2006, SPECIFICALLY STATES THAT:

BASED ON CURRENT LEVELS OF MISSION ACTIVITY, COAST GUARD SECTOR LONG ISLAND SOUND CURRENTLY DOES NOT HAVE RESOURCES TO IMPLEMENT THE MEASURES THAT HAVE BEEN IDENTIFIED AS BEING NECESSARY TO EFFECTIVELY MANAGE THE POTENTIAL RISK TO NAVIGATION SAFETY AND MARITIME SECURITY ASSOCIATED WITH THE BROADWATER ENERGY PROPOSAL.

IN OTHER WORDS, THE COAST GUARD SEES SEVERE SAFETY RISKS ASSOCIATED WITH THE PROPOSED PROJECT AND SPECIFICALLY SAYS THAT IT DOES NOT HAVE THE RESOURCES TO MANAGE THAT RISK EFFECTIVELY. IN ITS REPORT, THE COAST GUARD SPECULATES THAT LOCAL AGENCIES, SUCH AS SUFFOLK COUNTY OR THE TOWNS LOCATED IN THE COUNTY COULD ASSIST IN PROVIDING SECURITY (AT THE COST OF SUFFOLK COUNTY TAXPAYERS!). DESPITE ITS OWN SPECULATION ABOUT LOCAL MUNICIPALITIES TAKING ON THIS ENORMOUS BURDEN, THE COAST GUARD ADMITS IN THE SAME REPORT THAT:

"CURRENTLY THE AGENCIES THAT COULD POTENTIALLY PROVIDE ASSISTANCE DO NOT HAVE THE NECESSARY PERSONNEL, TRAINING OR EQUIPMENT."

THUS, ACCORDING TO THE COAST GUARD, NEITHER IT NOR LOCAL AGENCIES ARE CAPABLE OF PROVIDING FOR THE SAFETY AND SECURITY OF THE FLOATING GAS FACILITY, THE TANKERS, AND THE OTHER USERS OF THE SOUND.

MOST ASTONISHINGLY IS THE COAST GUARD'S SUGGESTION IN ITS REPORT THAT SINCE THE FEDERAL, STATE, AND LOCAL GOVERNMENTS DO NOT HAVE THE CAPABILITIES TO SAFEGUARD THE BROADWATER PROJECT, THAT BROADWATER COULD HIRE PRIVATE SECURITY COMPANIES TO PROVIDE SAFETY FOR ITSELF AND THE SUPPLY TANKERS. WE CANNOT HAVE ARMED PRIVATE, UNTRAINED PERSONNEL ROVING THE SOUND. THIS IS NOT SOME MOVIE-SET, LIKE PIRATES OF THE CARIBBEAN, THIS IS OUR HOME. IT IS SIMPLY UNREALISTIC AND UNACCEPTABLE.

IN CONCLUSION, I APPRECIATE THE OPPORTUNITY FOR MYSELF, MY FELLOW ELECTED REPRESENTATIVES AND –MOST IMPORTANTLY – THE PUBLIC, TO BE HEARD TONIGHT BY OUR FEDERAL AND STATE AGENCIES THAT ARE ADMINISTERING THIS PROCESS.

IT IS PARTICULARLY IMPORTANT THAT WE BE HEARD DURING EVERY STEP OF THIS PROCESS AND THAT OUR JURISDICTIONAL AND REGULATORY POWERS BE RESPECTED.

SUFFOLK COUNTY HAS A LONG AND RICH HISTORY IN PROTECTING AND PRESERVING OUR ENVIRONMENT.

THE MANY UNIQUE NATURAL FEATURES OF OUR ISLAND – OUR WATERWAYS, OUR BEACHES AND OUR SHORELINES – HELP MAKE SUFFOLK COUNTY ONE OF THE MOST DESIRABLE PLACES IN THE WORLD TO LIVE, AND IT IS NOT A STRETCH OF THE IMAGINATION TO SAY THAT SUFFOLK COUNTY RESIDENTS HAVE ENTRUSTED THEIR ELECTED REPRESENTATIVES, FROM THE LOCAL LEVEL ON UP TO ALBANY AND WASHINGTON, D.C., TO WORK TOWARDS PROTECTING THE ENVIRONMENT AND PRESERVING THIS WAY OF LIFE FOR GENERATIONS TO COME.

WHILE MANY OF THE SPECIFIC DESIGN ELEMENTS, TECHNOLOGIES, PROCEDURES AND PLANS FOR THE PROPOSED FACILITY HAVE NOT YET BEEN FORMULATED OR RELEASED, IT IS MY OPINION THAT THE RISK OF LEAKS AND SPILLS, THE NEGATIVE IMPACT ON THE LONG ISLAND SOUND ECOSYSTEM AND THE POTENTIAL FOR CATASTROPHIC FAILURE OR DESTRUCTION OF THE BROADWATER LNG FACILITY OUTWEIGH ANY POTENTIAL BENEFITS OF THIS PRIVATE, COMMERCIAL VENTURE.

A PROJECT OF THIS SIZE, WITH UNTESTED TECHNOLOGY, WROUGHT WITH SAFETY AND SECURITY CONCERNS, LOCATED IN THE MIDDLE OF AN ESTUARY OF NATIONAL SIGNIFICANCE AND IN PROXIMITY TO DENSELY POPULATED AREAS IS JUST A BAD IDEA.

SUFFOLK COUNTY DEMANDS THAT FERC AND ALL OTHER AGENCIES INVOLVED IN THIS APPLICATION RESOUNDLY REJECT IT. SIMPLY PUT, THIS APPLICATION IS NOT IN THE BEST INTEREST OF THE PUBLIC AND MUST BE DENIED.

RESPECTFULLY SUBMITTED,

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STEVE LEVY  
COUNTY EXECUTIVE

**TESTIMONY BEFORE THE HOUSE SUBCOMMITTEE ON THE  
COAST GUARD AND MARITIME TRANSPORTATION  
BY  
BILL MCGINTEE  
EAST HAMPTON TOWN SUPERVISOR**

I am Bill McGintee, East Hampton Town Supervisor. Thank you for this opportunity to address the subcommittee.

The movement of the LNG carriers with their huge safety zones is going to have a huge, detrimental impact on the East End of Long Island. The ships are so dangerous that the Coast Guard requires a moving safety zone around them 6,000 yards long and 1,600 yards wide. That is 60 football fields long and 16 football fields wide, moving with the ship at 10 knots.

The Race, the most dangerous part of the route for the LNG carriers to navigate, is one of the most heavily used fishing spots on the East End. Vessels, particularly vessels from East Hampton, utilize that area almost every day, weather permitting.

The use of the passage between Montauk Point and Block Island is limited by weather conditions and vessel draft and cannot be used by LNG carriers at all times. This route is inappropriate for this cargo.

Moreover, the Coast Guard admits that it does not have the resources "to implement that have been identified as being necessary to manage the potential risk" and that local agencies would require to assist.

Much of the burden for providing adequate security for the LNG carriers and their security zones, as well as some of the security to the FRSU itself, would fall upon the Town of East Hampton and the Marine Patrol Unit. The Broadwater Proposal would require law enforcement from the Town of East Hampton to keep vessels out of the security zone to escort

tankers, to arrest and impound fishing and other boats obstructing the security zone, aid and assist those with medical emergencies on the vessels and to deal with law enforcement issues on the carriers and even the LNG facility. In addition, the Town would be required to assist with clearing and assisting vessels and tankers in navigation mishaps in the shallow waters of Montauk Channel. The Town is not at all equipped to meet these demands, especially for the benefit of a for-profit operation such as Broadwater. Further, the Town is not able to meet homeland security demands. The Town's fleet currently consists of two 28 foot marine patrol boats, one 32 foot work boat and several 20 foot outboards. None of these boats is armed. None is adequate.

In addition, we ask this committee to consider the on-shore law enforcement and security challenges Broadwater would present. For example, accidents or mishaps involving LNG carriers with dangerous cargos in the East Hampton/Montauk area would require the Town Harbormasters to close Montauk inlet and would require the local police to close on-shore facilities, tourist attractions and the docks in the Montauk harbor area.

The Town of East Hampton is frequently called upon to assist the Coast Guard even with its current more limited duties. Frankly, it appears that the Coast Guard lacks the resources to maintain even the current level of need in Montauk. The Town currently assists the Coast Guard, but is not reimbursed. Thus, even if the Town had adequate resources, assistance with the safety and security necessary for Broadwater would have a devastating budgetary impact.





**TOWN OF BROOKHAVEN  
COUNCILMAN KEVIN T. McCARRICK, DISTRICT 2**

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**TESTIMONY BY BROOKHAVEN TOWN COUNCILMAN KEVIN T.  
McCARRICK BEFORE THE HOUSE SUBCOMMITTEE ON THE COAST  
GUARD AND MARITIME TRANSPORTATION**

May 7, 2007

Good afternoon Subcommittee Chairman Elijah Cummings, Ranking Member Steve LaTourette, and members of the House Subcommittee on Coast Guard and Maritime Transportation.

My name is Kevin McCarrick representing Council District 2 Brookhaven. My district encompasses parts of Terryville, Ridge and Coram, as well as the hamlets of Miller Place, Mount Sinai, Rocky Point, Sound Beach, Shoreham and East Shoreham. As the elected local representative for the hamlet of Wading River I am greatly concerned regarding the potential effects of locating an LNG Barge facility off Shoreham/Wading River in Long Island Sound.

Anyone who doubts the sincere and overwhelming magnitude of local public concern need not take my office or any other elected official's word. They need not consult leading environmental activists or science experts regarding the Broadwater Proposal. Indeed all anyone needs to do is recall the 1,000 plus residents of our northeastern communities who attended the FERC public hearing of January 11, 2007, some parking as far as a half mile just to attend. We as a community from all walks of life and all occupations voice in near unanimous harmony a reverberant NO to the Broadwater proposal.

Among the many concerns was the real possibility of a terrorist incident at this site. Sadly, we live during a period of history where the very possibility of such an action is ever

present. We live with the very real possibility of an attractive target drawing and increasing the likelihood of a terrorist action based on the very nature of the activity. A large floating LNG bomb is undeniably such an entity that by its very nature increases the likelihood of an attack. Just as World Trade Center stood as a beacon of our nations economic might, so it's size attracted two attacks over the course of 8 years. Each causing alarm culminating with the unthinkable catastrophic incident forever burned into the American psyche.

We run the same type of risk by the very nature of this LNG proposal regardless of what anyone states. The reality of the terrorist mind needs to be confronted boldly. I have been active in considering this set of facts. Official governmental publications support these concerns and we need to seriously consider them. My constituents and I will be impacted directly by the LNG barge, tankers and other related activities.

We are deeply concerned with the statements in the Coast Guard Report released on September 21, 2006, which candidly admits that the U.S. Coast Guard does not have the resources to provide security for the LNG barge and tankers or provide rescue service for the workers on the tankers and barge. The local fire departments are not equipped to respond to the magnitude of possible incidents such as LNG fires or explosions.

I attended the hearing conducted by the Suffolk County Legislature's Committee on Energy and the Environment last month where GAO staff answered questions from the committee and the public regarding its recent report on the public safety consequences of a terrorist attack on LNG tankers.

The statements at that hearing underscored the fact that the potentially disastrous impacts of LNG accidents, explosions and fires have yet to be studied sufficiently. Most troubling is the fact that there is not scientific unanimity on the question of the distance one must be from an LNG fire in order to be protected from heat burns. Indeed, the Sandia Report--which is the foundation for the DEIS--is being called into question as to the 1 mile estimate of the distance

one must be in order to be protected from burns from an LNG fire. The range, according to some experts weighing into the GAO, may be closer.

We learned for the first time at that Suffolk County Legislative hearing that the GAO is conducting additional studies as to the safety of LNG facilities. One will review the Coast Guard's ability to secure LNG facilities. A second will review the impact of LNG fires on marine life. These reports will be released too late to be considered in the FEIS for the Broadwater proposal.

In conclusion, I would urge this committee to finally consider the many questions and few available answers to this proposal. GAO is conducting an additional examination of the issues surrounding Coast Guard's ability to respond. At minimum, this Committee should request that FERC refrain from taking further action on the Broadwater proposal until this GAO Report on the Coast Guard's security capability is completed.

The time this would take to accomplish is but a small investment in the future of our collective security. This is not merely a regional issue rather we are dealing with a national issue with far reaching consequences.

We know that major energy corporations are seeking to cite such LNG facilities across the nation, we must be prepared to address this issue with careful study.

Perception of the world post 9/11 has changed because it has to. We as a region and nation have no choice. In similar fashion, this MUST be factored into the equation because there is no choice. Can our Coast Guard and EMS handle the catastrophic burden of a terrorist action? Are we as a local government prepared to shoulder additional burden providing security and emergency medical services to those unfortunate to become casualties.

Locally our hospitals are under siege, grappling with questions of funding. There are very real possibilities that some may be forced to curtail services or close.

If this becomes reality will we be able to service anticipated victims? This needs to be examined closely. Local government will need to be there as a support system to deliver vital services. I ask the Committee to carefully consider these facts as you assess the outlined costs of Coast Guard resources, please remember the local governmental burden. Our residents and those who serve our community every day deserve nothing less.

Thank you for the opportunity to address you.

U. S. Department of  
Homeland Security  
United States  
Coast Guard



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**DEPARTMENT OF HOMELAND SECURITY**

**U. S. COAST GUARD**

**STATEMENT OF**

**CAPT MARK O'MALLEY  
CHIEF, OFFICE OF PORT AND FACILITY ACTIVITIES**

**AND**

**CAPT PETER BOYNTON  
CAPTAIN OF THE PORT FOR LONG ISLAND SOUND**

**ON**

**THE COAST GUARD'S ROLE IN LNG SAFETY AND SECURITY**

**BEFORE THE**

**COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE  
SUBCOMMITTEE ON COAST GUARD AND MARITIME TRANSPORTATION**

**U. S. HOUSE OF REPRESENTATIVES**

**MAY 7, 2007**

**Introduction**

Good morning Mr. Chairman and distinguished members of the Committee. I am Captain Mark O'Malley, Chief, Office of Port and Facility Activities at U.S. Coast Guard Headquarters. It is my pleasure to appear before you today to discuss the Coast Guard's role in providing for the safety and security of Liquefied Natural Gas (LNG) vessels and facilities, and how the Coast Guard is cooperating with other Federal Agencies on this important national issue. I am joined by Captain Peter Boynton, Captain of the Port for Long Island Sound, who will address the Coast Guard's role as it relates to the LNG facility that Broadwater Energy has proposed to build and operate in the Sound.

As the Federal Government's lead agency for Maritime Homeland Security, the Coast Guard plays a major role in ensuring marine transportation of LNG, including LNG vessels, shoreside terminals, terminals located in state waters and LNG deepwater ports, are operated safely and securely, and that the risks associated with the marine transportation of LNG are managed responsibly. Today, I will briefly review the applicable laws and regulations that provide our authority and the requirements for the safe and secure operation of the vessels, shoreside terminals, and terminals located in state waters and deepwater ports. I will also describe how the Coast Guard is working with the other Federal entities here today, as fellow stakeholders in LNG safety and security.

**LNG Vessel Safety**

The Coast Guard has long recognized the unique safety and security challenges posed by transporting millions of gallons of LNG or "cryogenic methane." LNG vessels have had an enviable safety record over the last 45 years. Since international commercial LNG shipping began in 1959, tankers have carried over 40,000 LNG shipments and while there have been some serious accidents at sea or in port, there has never been a breach of a ship's cargo tanks. Insurance records and industry sources show that there were approximately 30 LNG tanker safety incidents (e.g. leaks, groundings or collisions) through 2002. Of these incidents, 12 involved small LNG spills which caused some freezing damage but did not ignite. Two incidents caused small vapor vent fires which were quickly extinguished.

Today, there are over 200 LNG vessels operating worldwide and another 100 or so under construction. While there are no longer any US flag LNG vessels, all LNG vessels calling in the U.S. must comply with certain domestic regulations in addition to international requirements. Our domestic regulations for LNG vessels were developed in the 1970s under the authority of the various vessel inspection statutes now codified in Title 46 United States Code. Relevant laws providing the genesis for LNG vessel regulation include the Tank Vessel Act (46 U.S.C. 391a) and the Ports and Waterways Safety Act of 1972, as amended by the Port and Tanker Safety Act of 1978 (33 U.S.C. 1221, *et. seq.*). Regulations located in Title 46, Code of Federal Regulations (CFR) Part 154, "Safety Standards for Self-Propelled Vessels Carrying Bulk Liquefied Gasses," specify requirements for the vessel's design, construction, equipment and operation. Our domestic regulations closely parallel the applicable international requirements, but are more stringent in the following areas: the requirements for enhanced grades of steel for crack arresting purposes in certain areas of the hull, specification of higher allowable stress factors for certain independent type tanks and prohibiting the use of cargo venting as a means of cargo temperature or pressure control.

All LNG vessels in international service must comply with the major maritime treaties agreed to by the International Maritime Organization (IMO), such as the International Convention for the Safety of Life at Sea, popularly known as the "SOLAS Convention" and the International Convention for the Prevention of Pollution from Ships, popularly known as the "MARPOL Convention." In addition, LNG vessels must comply with the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk, known as the "IGC Code."

Before being allowed to trade in the United States, operators of foreign flag LNG carriers must submit detailed vessel plans and other information to the Coast Guard's Marine Safety Center (MSC) to establish that the vessels have been constructed to the higher standards required by our domestic regulations. Upon the MSC's satisfactory plan review and on-site verification by Coast Guard marine inspectors, the vessel is issued a Certificate of Compliance. This indicates that it has been found in compliance with applicable design, construction and outfitting requirements.

The Certificate of Compliance is valid for a two-year period, subject to an annual examination by Coast Guard marine inspectors, who verify that the vessel remains in compliance with all applicable requirements. As required by 46 U.S.C. 3714, this annual examination is required of all tank vessels, including LNG carriers.

#### **LNG Vessel Security**

In addition to undergoing a much more rigorous and frequent examination of key operating and safety systems, LNG vessels are subject to additional measures of security when compared to crude oil tankers, as an example. Many of the special safety and security precautions the Coast Guard has long established for LNG vessels derived from our analysis of "conventional" navigation safety risks such as groundings, collisions, propulsion or steering system failures. These precautions pre-dated the September 11, 2001 tragedy, and include such measures as special vessel traffic control measures that are implemented when an LNG vessel is transiting the port or its approaches, safety zones around the vessel to prevent other vessels from approaching nearby, escorts by patrol craft and, as local conditions warrant, coordination with other Federal, state and local transportation, law enforcement and/or emergency management agencies to reduce the risks to, or minimize the interference from other port area infrastructure or activities. These activities are conducted under the authority of existing port safety and security statutes, such as the Magnuson Act (50 U.S.C. 191 *et. seq.*) and the Ports and Waterways Safety Act, as amended.

Since September 11, 2001, additional security measures have been implemented, including the requirement that all vessels calling in the U.S. must provide the Coast Guard with a 96-hour advance notice of arrival (increased from 24 hours advance notice pre-9/11). This notice includes information on the vessel's last ports of call, crew identities and cargo information. In addition, the Coast Guard now regularly boards LNG vessels at-sea, where Coast Guard personnel conduct special "security sweeps" of the vessel and ensure it is under the control of proper authorities during its port transit. In order to protect the vessel from external attack, LNG vessels are escorted through key port areas. These armed escorts afford protection to the nearby population centers by reducing the probability of a successful attack against an LNG vessel. These actions are in addition to the safety and security oriented boardings previously described.

Of course, one of the most important post-9/11 maritime security improvements has been the passage of the Maritime Transportation Security Act of 2002 (MTSA). Under the authority of MTSA, the Coast Guard developed a comprehensive new body of security measures applicable to vessels, marine facilities and maritime personnel. Our domestic maritime security regime is closely aligned with the International Ship and Port Facility Security (ISPS) Code. The ISPS Code, a mandatory requirement of the SOLAS Convention, was adopted at the IMO in December 2002 and came into effect on July 1<sup>st</sup> 2004. Under the ISPS Code, vessels in international service, including LNG vessels, must have an International Ship Security Certificate (ISSC). To be issued an ISSC by its flag state, the vessel must develop and implement a threat-scalable security plan that, among other things, establishes access control measures, security measures for cargo handling and delivery of ships stores, surveillance and monitoring, security communications, security incident procedures, and training and drill requirements. The plan must also identify a Ship Security Officer who is responsible for ensuring compliance with the ship's security plan. The Coast Guard rigorously enforces this international requirement by evaluating security compliance as part of our ongoing port state control program.

Any LNG vessel entering Long Island Sound would be subject to strict safety and security standards. There would be a moving security zone around the LNG carriers and a fixed safety zone around the proposed Floating, Storage and Regasification Unit (FSRU). Coast Guard enforcement activities would be based on the most current threat assessment as well as standing Coast Guard policy and procedures which account for known and unknown threats. State and local law enforcement agencies could assist the Coast Guard with the enforcement of these safety zones. Another element of the extensive layered security system established by MTSA is Coast Guard approved facility security plans. Implementing the facility security plan for the FSRU would be Broadwater Energy's responsibility. An element of the facility security plan for the FSRU would include the employment of private security guards to conduct on-water security patrols in the vicinity of the FSRU. Private security guards would not have the authority to enforce the fixed or moving safety zones.

#### **Safety and Security of LNG Terminals Located Onshore and in State Waters**

Presently there are six shoreside LNG terminals in the U.S. and U.S. Territories: the export facility in Kenai, AK; and, import terminals in Everett, MA; Cove Point, MD; Elba Island, GA; Lake Charles, LA; and Penuelas, PR. Under Title 33, CFR Part 127, the Coast Guard has responsibility for the facility's waterside "marine transfer area" and the Department of Transportation's Pipeline and Hazardous Materials Safety Administration has responsibility for shoreside portion of the facility. The safety requirements regulated by the Coast Guard in the marine transfer area include electrical power systems, lighting, communications, transfer hoses and piping systems, gas detection systems and alarms, firefighting equipment, and operational matters such as approval of the terminal's Operations and Emergency Manuals and personnel training.

The recently promulgated "Maritime Security Regulations for Facilities," found in Title 33 CFR Part 105, were developed under the authority of MTSA. These regulations require the LNG terminal operator to conduct a facility security assessment and develop a threat-scalable security plan that addresses the risks identified in the assessment. Much like the requirements prescribed for vessels, the facility security plan establishes access



control measures, security measures for cargo handling and delivery of supplies, surveillance and monitoring, security communications, security incident procedures and training and drill requirements. The plan must also identify a Facility Security Officer who is responsible for ensuring compliance with the facility security plan. The six existing U.S. LNG terminals were required to submit their security plans to the Coast Guard for review and approval in 2003 and full implementation of the plans was required by July 1, 2004. These reviews have been completed, and the terminals' compliance with the plans has been verified by local Coast Guard port security personnel through on-site examinations. In contrast to our safety responsibility, whereby our authority is limited to the "marine transfer area," our authority regarding the security plan can, depending upon the particular layout of the terminal, encompass the entire facility.

The Natural Gas Act, as amended by the Energy Policy Act of 2005, states the Federal Energy Regulatory Commission (FERC) shall have the exclusive authority to approve or deny an application for the siting, construction, expansion or operation of an LNG terminal. For its part, the Coast Guard has determined that the proposed FSRU is an offshore structure and will be regulated the same as any LNG facility. Therefore, it, like the existing shoreside LNG facilities, would be subject to the MSTA requirements of 33 CFR 105 and facility requirements of 33 CFR 127.

The Natural Gas Act, as amended by the Energy Policy Act of 2005 also requires LNG terminal operators to develop an Emergency Response Plan in consultation with the USCG, State and Local agencies. Part of the process of developing the ERP is to identify any additional resources that may be required or needed by State or Local agencies to meet the additional response requirements. Once identified the plan must also include a cost-sharing plan and is subject to approval by FERC prior to any final approval to begin construction is issued.

#### **Siting Shoreside LNG Terminals Located Onshore and in State Waters**

The issue of constructing new shoreside LNG terminals and those located in state waters has been controversial, due in large part to public concerns over both perceived and actual risks to the safety and security of LNG vessel operations. Under the Natural Gas Act, the Federal Energy Regulatory Commission (FERC) has permitting authority, including safety review of facility siting, for LNG terminals onshore and within state waters. The Coast Guard does not determine or approve the location of a facility proposed to be constructed either offshore or inside state waters. .

However, the Coast Guard plays an important role in the siting process once it has begun. Along with an application to the FERC, an owner or operator who intends to build a new shoreside LNG facility, facility located inside state waters, or who plans new construction on an existing facility, must submit a "Letter of Intent" to the Coast Guard Captain of the Port (COTP) in whose zone the facility is located (in accordance with 33 CFR 127.007). This letter must provide information on: the physical location of the facility; a description of the facility; the characteristics of the vessels intended to visit the facility and the frequency of visits; and, charts that show waterway channels and identify commercial, industrial, environmentally sensitive and residential areas in and adjacent to the waterway to be used by vessels enroute to the facility, within 15.5 miles of the facility.

The COTP reviews the information provided by the applicant and issues a Letter of Recommendation (LOR) as to the suitability of the waterway for LNG vessels. Factors considered include: density and characteristics of marine traffic in the waterway; locks, bridges or other man made obstructions in the waterway; the hydrologic features of the waterway, e.g., water depth, channel width, currents and tides, natural hazards such as reefs and sand bars; and underwater pipelines and cables. If the waterway is found suitable the COTP will issue a Letter of Recommendation (per 33 CFR 127.009). The COTP may also issue an LOR that finds the waterway suitable provided certain measures are implemented to manage potential safety and security risks that were identified during the assessment process. Lastly, the COTP can issue an LOR that finds the waterway not suitable. In addition, the Coast Guard serves as a cooperating agency with FERC for purposes of the National Environmental Policy Act (NEPA) review of those aspects of the project over which we have jurisdiction.

Both the Coast Guard and the FERC recognize that the "Letter of Recommendation" process, which dates from 1988, does not, in its current form, adequately take into account the security concerns of our post 9/11 environment. Also, the existing regulations are focused primarily on conventional navigation safety risk management issues such as traffic density, hydrologic characteristics of the waterway, etc. They do not focus on port security risk management issues, and in particular, they do not directly require an analysis of the consequences of an LNG spill on the waterway proposed for vessel transits.

To address this problem, on February 10, 2004, the Coast Guard entered into an Inter-Agency Agreement (IAA) with FERC and RSPA to work in a coordinated manner to address issues regarding safety and security at shoreside LNG facilities, including terminal facilities and tanker operations, to work together, avoid duplication of effort, and to maximize the exchange of relevant information related to the safety and security aspects of LNG facilities and the related maritime concerns.

Soon after the completion of the IAA, work began on a more detailed guidance document for use by the involved agencies. On 14 Jun 05, the Navigation and Vessel Inspection Circular (NVIC) 05-05, "*Guidelines on Assessing the Suitability of a Waterway for LNG Marine Traffic*," was published to provide guidance on how to conduct and validate a Waterway Suitability Assessment so that full consideration is given to the safety and security of the port, the facility, and vessels transporting the LNG. Simply put, it established a uniform national process for conducting port-specific risk and waterway suitability assessments.

Under the NVIC 05-05 guidelines, since the Coast Guard is also a cooperating agency for the preparation of the FERC's Environmental Impact Statement (EIS), this guidance assists the Coast Guard in obtaining all information needed to assess the proposed LNG marine operations and fulfill its commitment to FERC to provide input to their EIS.

The Waterway Suitability Assessment (WSA) process put forth in the NVIC uses a risk management approach to developing mitigation measures for the hazards introduced to the affected waterway due to the nature of LNG. The NVIC requires the applicant to conduct a risk analysis of the waterway and propose mitigating measures. In addition, the applicant is required to do an analysis of the resources necessary to close existing resource gaps in proposed safety and security to perform the proposed mitigation measures. This WSA process usually begins very early in the process, typically during the FERC's pre-filing period.

There wasn't a NVIC outlining this process, prior to when Broadwater Energy submitted the Letter of Intent in November 2004 for the proposed FSRU and a WSA was not prepared for this project. As provided for by the NVIC, the Coast Guard COTP Long Island Sound conducted a thorough, systematic assessment that involved representatives from 50 stakeholders of potential safety and security risks associated with the proposed FSRU.

In addition to an evaluation of conventional navigation safety risks, a critical part of the safety and security assessment was an analysis of an LNG spill on the waterway and the thermal effects from a resulting pool fire. The analysis includes the application of the hazard distances and zones of concern based on the spill consequence models described in the 2004 Sandia National Labs Report. The hazard zone sizes for the proposed project are larger than those in the Sandia Report due to the consideration of the larger cargo tanks on the next generation of LNG carriers and the incorporation of the FSRU. It should also be noted that project specific modeling shows that with only some exceptions in hazard zone 3, none of the high risk area touch land.

Once the FERC's EIS is published, it can be adopted by the Coast Guard if it meets all of the Coast Guard's NEPA requirements. If so, the Coast Guard issues a Record of Decision that adopts the EIS for our Letter of Recommendation process.

When the Coast Guard's WSA validation process is complete, the COTP makes a preliminary finding regarding the suitability of the waterway, whether the waterway can accommodate the proposed traffic and whether there is sufficient capability within the port community to responsibly manage the safety and security risks of the project. This preliminary finding is communicated to the FERC in a Waterway Suitability Report (WSR).

As previously stated, the safety and security assessment of potential risks associated with the proposed Broadwater Energy project that was conducted by the Captain of the Port Long Island Sound included input from 50 stakeholders. A Harbor Safety Working Group composed of waterway users including the CT Department of Environmental Protection, Cross Sound Ferry, Suffolk County Fire and Rescue and 25 others was formed to review the safety risks assessment compiled by the COTP and to help evaluate proposed risk mitigation measures. Additionally, a Sub Committee of the Long Island Sound Area Maritime Security Committee including representatives from Homeland Security, Transportation Security Administration (Aviation), Customs and Border Protection, Federal Bureau of Investigation, Nassau County Police Department and 15 other agencies, was established to assess potential security risks associated with the proposed facility. 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 in 2005.

The WSR for the proposed Broadwater Energy project conveys the assessment and analysis and a preliminary determination by the COTP of the mitigation measures that would be necessary for the vessel to safely and securely transit to the proposed facility. The WSR was submitted to FERC and was incorporated into the EIS. FERC addressed in the EIS the potential environmental impacts of the proposed vessel transits on the waterway, the environmental impacts of the proposed risk mitigation measures and the public safety and environmental impacts of a LNG spill and fire on the waterway. After the final EIS is

published, the Coast Guard will issue a Record of Decision and a “Letter of Recommendation” to the owner or operator of the proposed facility, and to the state and local government agencies having jurisdiction, as to the suitability of the waterway for the proposal (33 CFR 127.009).

The Coast Guard is also working on the regulatory changes in 33 CFR Part 127 necessary to bring the existing “Letter of Intent” and “Letter of Recommendation” regulations up to date, specifically by requiring the waterways management information to be submitted to the COTP at the time of FERC “pre-filing” or conventional application, and adding specific requirements for a port security assessment, in addition to the waterways management information, to be presented to the COTP for evaluation.

#### **LNG Deepwater Ports: Authority and Agency Relationships**

The Coast Guard’s authority to regulate Deepwater Ports (DWP) derives from the Deepwater Port Act of 1974 (DWPA). The regulations pertaining to the licensing, design, equipment and operation of DWPs are found in Title 33 CFR Subchapter NN (Parts 148, 149 and 150). Originally pertaining only to oil, MTSA amended the DWPA to include natural gas. This Act allows for the licensing of DWPs in the Exclusive Economic Zone, outside of state waters, along all maritime coasts of the United States. The Secretary of the Department of Homeland Security (DHS) and the Secretary of DOT delegated the processing of DWP applications to the Coast Guard and the Maritime Administration, respectively. Maritime Administration is the license issuing authority and works in concert with the Coast Guard in developing the Environmental Impact Statement, while the Coast Guard has primary jurisdiction over design, equipment and operations and security requirements. The DWPA established a specific time frame of no more than 330 days from the date of publication of a Federal Register notice of a “complete” application to the date of approval or denial of a DWP license. Among other requirements, an applicant for a DWP license must demonstrate consistency with the Coastal Zone Management Plan of the adjacent coastal States.

The Coast Guard and Maritime Administration, in cooperation with other Federal agencies, must comply with the requirements of the National Environmental Policy Act in processing DWP applications within the timeframes prescribed in the Deepwater Port Act. To date the Coast Guard has received a total of 17 DWP applications, including five that have already been licensed: Louisiana Offshore Oil Platform, Chevron-Texaco’s Port Pelican project (on indefinite hold), Excelsior Energy’s Gulf Gateway project, Suez LNG North America’s Neptune project, and Shell’s Gulf Landing (Shell has effectively stopped forward movement on this project). Recently, the Maritime Administrator has issued Records of Decisions for three others: Freeport McMoRan’s Main Pass Energy Hub, Suez’s Neptune project and Excelsior Energy’s Northeast Gateway. The latter two are off the coast of Massachusetts and the others are all offshore of Louisiana. Only the Gulf Gateway has been built so far. Three have been withdrawn and seven others are in various stages of processing. We are anticipating between two and four additional applications within the next several months.

To expedite the application review process, and more efficiently coordinate the activities of the numerous stakeholder agencies, the Coast Guard entered into a Memorandum of Understanding (MOU), involving more than a dozen agencies, including the Department of the Interior, FERC, NOAA, the Army Corps of Engineers and the Environmental Protection Agency. The MOU obliges the participating agencies to work with each other and with other

entities as appropriate, to ensure that timely decisions are made and that the responsibilities of each agency are met. These responsibilities include: assessing their particular role in the environmental review of DWP licenses; meeting with prospective applicants and other agency representatives to identify areas of potential concern and to assess the need for and availability of agency resources to address issues related to the proposed project.

**LNG Deepwater Ports Safety and Security**

While conventional crude oil DWPs have been in operation around the world for many years, LNG DWPs are an emerging concept. Currently, there is only one in operation, off the coast of Louisiana. There are a variety of different designs under development that borrow from designs and technology that have been time-tested in the offshore energy and the LNG industries. Proposals include ship-shaped hull designs similar to existing Floating Production, Storage and Offloading (FPSO) units, platform based storage and regasification units, gravity based structures, and innovative docking structures that attach directly to the LNG carrier to serve as both a mooring and offloading system. Because this is a new concept, the Coast Guard's regulations apply a "design basis" approach, rather than mandate a series of prescriptive requirements. Under a "design basis" approach, each concept is evaluated on its own technical merits, using relevant engineering standards and concepts that have been approved by recognized vessel classification societies and other competent industrial and technical bodies. In addition, the Coast Guard's DWP regulations require that all LNG DWPs develop and implement a security plan that, at a minimum, will address the key security plan elements provided in Title 33 CFR Part 106, "Maritime Security: Outer Continental Shelf Facilities." A risk and consequence analysis is completed as part of the risk mitigation strategy and security measures are developed between the applicant and the Coast Guard local Captain of the Port.

Thank you for giving us this opportunity to discuss the Coast Guard's role in LNG safety and security and our relationships with other stakeholder agencies. I will be happy to answer any questions you may have.

**Testimony of**

**J. Mark Robinson  
Director  
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**Before the Transportation and Infrastructure  
Subcommittee on  
Coast Guard and Maritime Transportation  
U.S. House of Representatives**

**Hearing on  
Safety and Security of Liquefied  
Natural Gas**

**May 7, 2007**

My name is J. Mark Robinson and I'm Director of the Office of Energy Projects (OEP) at the Federal Energy Regulatory Commission (FERC or Commission). I am here as a staff witness and do not speak on behalf of any Commissioner. Our office is responsible for non-federal hydroelectric licensing, administration, and safety; siting of electric transmission lines; certification of interstate natural gas pipelines and storage facilities; and, more significantly for today's session, authorization and oversight over the construction, operation, and safety of on-shore and near-shore Liquefied Natural Gas (LNG) terminals. We also share security responsibilities for these facilities with the U.S. Coast Guard (Coast Guard), which has primary responsibility under the Maritime Transportation Security Act of 2002.

I want to thank you for this opportunity to speak today and specifically to address how through our extensive design review process we ensure the safety and security of LNG import facilities and the related LNG shipping. Also, I will describe how we include environmental impact review, along with extensive opportunity for public and agency input, into our overall assessment process.

Overall, the safety record of the industry is exemplary. LNG terminals in the United States have never had an LNG safety-related incident that harmed the public or the environment. Similarly, no shipping incidents have occurred worldwide that resulted in a significant loss of cargo during the almost 50 years of LNG transport. I will first describe the measures we use to provide for safe and secure LNG import terminal siting, construction and operation. Then, I will briefly address the measures taken to ensure the continuing safe history of LNG shipping.

**Safety, Security and Siting of LNG Import Terminals**

Be assured that consideration of public safety is the Commission's highest priority when fulfilling its Congressional mandate under the Natural Gas Act to regulate facilities for the importation of natural gas. The Commission has been proactive in addressing safety concerns and rigorously applies high safety standards to these projects. When projects meet our safety standards and are found to be in the public interest, the Commission will approve them. If a proposed project falls short of these standards, the Commission will reject it, as was done with the proposed Keyspan LNG Terminal Project in Providence, Rhode Island.

The excellent safety record of the LNG import facilities in the United States extends over the past 35 years. The siting and oversight of LNG facilities are governed by a comprehensive scheme of federal regulation that guarantees that the FERC and other federal agencies work together to ensure public safety. The FERC's LNG project review process works to address all siting and operational issues with the full participation of the federal and state agencies, and the public. Once in operation, FERC oversight and inspection are on-going programs for the life of the facility.

**Approvals and Authorizations Required**

The Energy Policy Act of 2005 in Section 311 confirms that FERC has exclusive authority to approve or deny an application for the siting, construction, expansion, or operation of an LNG terminal onshore and in state waters. This siting authority is exercised, however, in concert with a number of other federal authorities such as the Coast Guard, the U.S. Army Corps of Engineers (COE), and state approvals under the



Coastal Zone Management Act, Clean Air Act and Clean Water Act (Federal Water Pollution Control Act). An example of this is our close work with the Coast Guard, which must issue a Letter of Recommendation (LOR) for LNG tankers to make deliveries to a terminal. A terminal operator must obtain an LOR from the Coast Guard before it would be allowed to accept tanker deliveries. Similarly, the state must issue the permits noted above for a project to move forward. Also, the U.S. Army Corps of Engineers must issue approvals under the Rivers and Harbors Act and Section 404 of the Federal Clean Water Act before construction can begin.

**The FERC's Overall Assessment Process**

Every aspect of our engineering and siting review and our coordination with the Coast Guard and the DOT is geared toward assuring that a facility will operate safely and securely and in an environmentally sound manner. This review is broken into three distinct phases: pre-authorization review; pre-construction review; and pre-operation review.

**Pre-Authorization Review** -- During the pre-authorization phase, Commission staff addresses the safety and security and environmental aspects of an LNG import terminal by reviewing the site and facility designs and ensuring that the proposal meets the federal safety standards including design and operational features for safety and reliability. FERC regulations require that from the early stages of project development, potential applicants meet with FERC staff to describe the proposal and solicit guidance on required design features. This early meeting provides an opportunity for FERC staff to offer suggestions related to the environmental, engineering and safety features of the proposal and review conceptual designs.

When ready, a terminal applicant applies to begin the pre-filing process and submits a request to the Director of OEP which demonstrates that the proper contacts with appropriate federal state and local agencies and others have been made and sufficient project details are developed in accordance with the FERC regulations. The FERC's pre-filing regulations were promulgated in compliance with the Energy Policy Act of 2005 in Title 18 of the Code of Federal Regulations (CFR), Section 157.21. The FERC's pre-filing process is designed to be interactive and offers a significant number of opportunities for the public and agencies to get information about a project and to provide their views and concerns to the Commission. These opportunities for public involvement include open houses sponsored by the applicant, scoping meetings held by the FERC staff, interagency meetings to address all permitting issues, availability of the complete record via the Commission website, public site visits, and comment meetings where interested persons provide comments to the Commission including electronic filing options.

All of the information developed by the FERC and agency staffs concerning environmental, safety, and engineering issues is presented in a detailed independent environmental impact statement (EIS) which is released in draft for a 45-day comment period. This draft EIS includes staff's analysis of all issues raised during the scoping and EIS preparation process. When the staff completes its review and analysis of all comments received on the draft EIS, it publishes a final EIS. The record in the proceeding is the ready for consideration by the Commission.

When pre-filing begins, we make sure that DOT and the Coast Guard are aware of new projects or proposed expansions. For example, we require that the applicant file its

Letter of Intent (LOI) to operate LNG tankers to a proposed LNG terminal with the Coast Guard at this point. These activities occur over at least a six-month time span during the mandatory pre-filing period required by the Energy Policy Act of 2005.

Based on input from FERC staff, the project sponsors continue to develop the front-end-engineering-design (FEED) to be filed as part of the formal application for the proposed LNG facility. The design information, which must be contained in the formal application, is extensive and is specified by 18 CFR § 380.12 (m) and (o). In order to ensure that the filings are complete, FERC publicly issued “Draft Guidance For Filing Resource Reports 11 (Reliability and Safety) & 13 (Engineering and Design) For LNG Facility Applications” in December 2005. This document clarified the level of detail required for the engineering submittal so FERC staff can adequately assess the safety, operability, and reliability of the proposed design. We provided specific guidance and clarification as follows:

- a. the level of detail, including a requirement for a hazard design review, necessary for the FEED submitted to the FERC;
- b. LNG spill containment sizing and design criteria for impoundments, sumps, sub-dikes, troughs or trenches;
- c. design spills to be used in the calculation of thermal and flammable vapor exclusion zones; and
- d. use of the Coast Guard’s Navigation and Vessel Inspection Circular 05-05 and the waterway suitability assessment process.

The level of detail required to be submitted in the proposed design will require the project sponsor to perform substantial front-end engineering of the complete facility. The

design information is required to be site-specific and developed to the extent that further detailed design will not result in changes to the siting considerations, basis of design, operating conditions, major equipment selections, equipment design conditions, or safety system designs considered by the FERC during the review process. The required information must include all features necessary for commissioning, start-up, operation and maintenance of the facility, including details of the utility, safety, fire protection and security systems. Novel designs require additional detail for proof of concept.

A complete FEED submittal will include up-to-date piping and instrumentation diagrams (P&IDs). Information on these drawings allows FERC staff to begin assessing the feasibility of the proposed design. Adequate P&IDs will include:

- equipment duty, capacity and design conditions;
- piping class specifications;
- vent, drain, cooldown and recycle piping;
- isolation flanges, blinds and insulating flanges;
- control valves and operator types (indicating valve fail position);
- control loops including software connections;
- alarm and shutdown set points;
- shutdown interlocks;
- relief valve set points; and
- relief valve inlet and outlet piping size.

Once an application is formally made to the Commission, FERC staff performs a detailed review of the information supporting the proposed LNG facility design. Since the enactment of the Energy Policy Act of 2005, no later than 30 days after the

application filing, the agency designated by the Governor of the state where the terminal is proposed may file an advisory report on state and local safety considerations. Before issuing an order authorizing an applicant to site, construct, expand, or operate an LNG terminal, the Commission shall review and respond specifically to the issues raised.

During the analysis of the application, FERC staff compiles pertinent technical information to assess the design of the LNG facility. Although operability and reliability of the proposed design are considered, our primary focus is on the safety features that must be built into the system. This review is performed prior to any Commission approval and evaluates the safety of:

- the LNG transfer systems;
- storage tanks and process vessels;
- pumps and vaporizers;
- pressure relief, vent and disposal systems;
- instrumentation and controls;
- spill containment systems;
- hazard detection and control systems; and
- emergency shutdown systems.

Each LNG import terminal must have an extensive array of hazard detection devices to provide an early warning for the presence of combustible gases, fires, or spills of LNG and activate emergency shut-down systems. Using the submitted design, FERC staff assesses the conceptual hazard detection system, which typically consists of combustible-gas detectors, fire detectors, heat detectors, smoke or combustion product

detectors, and low temperature detectors. Typically, each facility will have over 100 of these detectors.

Use of these active systems to shut down equipment automatically, and other passive safety protections, such as spill containment systems, are reviewed to ensure that appropriate safety provisions are incorporated in the plant design. A detailed layout of the passive spill containment system showing the location of impoundments, sumps, sub-dikes, channels, and water removal systems is evaluated to allow FERC staff to assess the feasibility of the location, design configuration, dimensions, capacity and materials of construction for this system. In accordance with Title 49 of the Code of Federal Regulations, § 193.2181, these spill containment systems must accommodate 110 percent of an LNG tank's maximum liquid capacity.

Active hazard control systems consisting of strategically placed dry chemical extinguishers; carbon dioxide or nitrogen snuffing equipment; high expansion foam systems; and fire-water systems throughout the terminal are evaluated in accordance with federal regulations and a project-specific fire protection evaluation. A detailed layout of the fire water system showing the location of fire water pumps, piping, hydrants, hose reels, and auxiliary or appurtenant service facilities is reviewed for adequacy.

In addition, each storage or process area containing LNG must be surrounded by an impoundment structure to contain and limit potential spills associated with that equipment. Based on the size and location of these impoundments, the project sponsor must establish exclusion zones so that the effects from potential LNG pool fires, as well as flammable vapors from an LNG spill which does not ignite, do not pose a hazard to the off-site public.

The calculation methods and acceptable criteria for the LNG facility exclusion zones are specified by the U.S. federal safety standards in Title 49 CFR § 193.2057 and 193.2059. In accordance with these regulations, the calculations are based on design spills specified by the National Fire Protection Association's 59A Standard (2001 version). The 59A Standard presents various design spills depending on the: type of equipment served by the impoundment; the type of tank; and the location/size of any penetrations into the tank. Exclusion zones are centered on the site impoundments and are based on both the downwind distance flammable vapors may travel and the distance to specified radiant heat flux levels.

For a spill which does not ignite, the distance from a design spill into an impoundment to the furthest edge of a flammable vapor cloud (*i.e.* 2.5% concentration of gas in air) must not extend beyond any plant property line which can be built upon. In the event of an ignited spill, the distance from the pool to the 10,000-, 3,000-, and 1,600 BTU/ft<sup>2</sup>-hr thermal flux levels must be considered. The regulations require that a radiant heat flux of 10,000 BTU/ft<sup>2</sup>-hr not cross any plant property line that can be built upon. A radiant heat flux of 3,000 BTU/ft<sup>2</sup>-hr may not reach certain buildings (*e.g.* assembly, educational, health care, or residential structures) located outside of the facility property line. In addition, a radiant heat flux of 1,600 BTU/ft<sup>2</sup>-hr may not reach any outdoor assembly areas of 50 or more persons outside of the facility property line. For exclusion zone areas associated with the 3,000-, and 1,600-BTU/ft<sup>2</sup>-hr radiant heat flux levels, the operator must be able legally to control land uses within any portion of these zones extending beyond the terminal site to prevent damaging effects of an LNG pool fire from impacting public safety.

During the project review required prior to any Commission decision, FERC staff will verify the applicant's exclusion zone calculations in order to ensure compliance with the siting standards contained in 49 CFR 193, and place the results in the EIS.

Further, during the pre-authorization phase and beyond the cryogenic design review, each application for an LNG facility is subject to a detailed review by the FERC staff of numerous other studies and reports that applicants are required to complete. These include:

- seismic analyses;
- fire protection evaluations;
- threat and vulnerability assessments; and
- preliminary operation and maintenance procedures.

The information used for the pre-authorization review is gathered from the application, data requests, and a Cryogenic Design Technical Conference held with the applicant's design team. This meeting allows FERC staff and company engineers to discuss specific engineering-related issues. Representatives from the Coast Guard and DOT, as well as state and local fire marshals, are invited to attend. Although the Coast Guard is generally in attendance to address facility issues, the issues specifically related to LNG vessel transit are more specifically dealt with during the Coast Guard's separate waterway suitability assessment (WSA) process.

The staff's conclusions and recommendations on the proposed design, including all safety measures, are presented in the Safety section of the publicly-released FERC EIS. Ultimately, these recommendations have appeared as conditions if a Commission Order authorizing the project is issued. In addition to design considerations, the Order



may also contain other LNG-specific standard conditions that pertain to the safe operation and security of the facility. If the Commission decides that a project would be safe, is in the public interest, and authorizes it, continued review would occur during the pre-construction phase.

**Pre-Construction Review** -- If a project sponsor receives a Commission Order and decides to pursue the project, it will engage the services of an engineering, procurement, and construction (EPC) firm to commence detailed engineering of the facility. This process results in a “final design” that usually contains further development or minor refinements to the approved FEED on file with the FERC. For these modifications, the FERC Order requires the project sponsor to request approval for the change, justify it relative to site-specific conditions, explain how that modification provides an equal or greater level of protection than the original measure; and receive approval from the Director of OEP before implementing that modification. For more significant changes, the project sponsor would be required to file an amendment or a new application, initiating another extensive review at the Commission.

The final design will typically include hundreds of pages of detailed engineering drawings and specifications for every area and piece of equipment in the facility including the marine platform, transfer lines, tanks, sumps, pumps, compressors, vaporizers, and blowers. Only after FERC staff has reviewed the final design for a particular facility component to ensure it complies with all the safety conditions of the Order and that it conforms to the approved design on file, will authorization to construct that component be granted. We review large-scale issues such as the facility’s final plot plan and location of equipment, tanks, and impoundments to verify that all exclusion

zones remain in compliance with siting regulations. These final review checks will also confirm that the number, location, type, and size of hazard detection and hazard control equipment match or improve upon the approved design and that redundancy, fault detection, and fault alarm monitoring exist in all potentially hazardous areas and enclosures.

Prior to entering the detailed design phase, we require project sponsors to perform a hazard and operability study of the initial design. This study is intended to identify potential process deviations that could occur during operation and lead to personnel injury or equipment damage. The analysis proceeds by systematically identifying possible causes for operational deviations and the consequences of these deviations at numerous locations in the regasification process. Areas of concern typically include equipment failures, human failure, external events, siting issues, previous incidents, and safeguard or control failures. These causes and consequences are in turn used to evaluate the inherent safeguards in the design and to identify suitable design modifications as required. Examples of the additional safeguards that are required are: detection systems, prevention systems, procedural safeguards, active and passive safety equipment, emergency response procedures, and secondary containment.

During the pre-construction phase, FERC staff will review this study as well as review all piping and instrumentation diagrams, including every valve and thermocouple, to make sure that the overall safety of the final design provides an equal or greater level of protection as the original design approved by the FERC.

Furthermore, the design of some facility components such as the foundation of the LNG tanks will be reviewed by geotechnical experts who determine if the foundation

structure is capable of safely supporting the load of a full LNG tank, even during seismic events.

In accordance with the Energy Policy Act of 2005, Commission Orders authorizing an LNG import terminal require the project sponsor to develop an Emergency Response Plan (ERP) in consultation with the Coast Guard and state and local agencies. Prior to any construction at the facility, this plan, which must also include cost-sharing provisions for safety and security, must be approved by the Commission. The ERP must include written procedures for responding to: emergencies within the LNG terminal; emergencies that could affect the public adjacent to an LNG terminal; and emergencies that could affect the public along the LNG vessel transit route. The ERP must be approved by the Commission prior to any final approval to begin construction at the terminal site.

Commission engineering staff reviews each ERP to ensure that the appropriate state and local agencies have been involved in preparing the plan, that the local Coast Guard Marine Safety Office has been consulted and concurs, and that the following topics are completely addressed:

- Structure of the incident management organization of the LNG terminal; and name, title, organization, and phone number of all required agency contacts;
- Procedures for responding to emergencies within the LNG terminal - identification of the types and locations of specific emergency incidents that may reasonably be expected to occur at the LNG terminal due to operating malfunctions, structural collapse, personnel error, forces of nature and activities adjacent to the terminal;

- Procedures for emergency evacuation adjacent to the LNG terminal and along LNG vessel transit route; detailed procedures for recognizing an uncontrollable emergency and taking action to minimize harm to terminal personnel and the public; procedures for the prompt notification of appropriate officials and emergency response agencies based on the level and severity of potential incidents; and the sequence of such notifications;
- Plans for initial and continuing training of plant operators and local responders; and provisions for annual emergency response drills by terminal emergency personnel, first responders, and appropriate federal, state and local officials and emergency response agencies; and
- Documentation that the required consultation with the Coast Guard and state and local agencies has been completed through correspondence with consulting agencies, and minutes or notes of coordination meetings.

In addition, both the Energy Policy Act of 2005 and Commission Orders authorizing LNG terminals require that the ERP include a cost-sharing plan identifying the mechanisms for funding all project-specific security costs and safety/emergency management costs that would be imposed on state and local agencies. The cost-sharing plan must specify what the LNG terminal operator will provide to cover the cost of the state and local resources required to manage the security of the LNG terminal and LNG vessel, and the state and local resources required for safety and emergency management, including:

- Direct reimbursement for any per-transit security and/or emergency management costs (for example, overtime for police or fire department personnel);

- Capital costs associated with security/emergency management equipment and personnel base (for example, patrol boats, fire fighting equipment); and
- Annual costs for providing specialized training for local fire departments, mutual aid departments, and emergency response personnel; and for conducting exercises.

To assist our review of the cost-sharing plan, we request the LNG terminal operator to include a letter of commitment with agency acknowledgement for each state and local agency designated to receive resources.

FERC and other federal agencies work with state and local entities, as well as the general public, to ensure that all public interest considerations are carefully studied and weighed before a facility is permitted and allowed to begin construction and operate, and that public safety and the environment are given high priority. No construction may commence until the Director of OEP finds that all safety requirements have been met.

**Pre-Operation Review** -- Once construction of the project has been authorized to begin, in addition to the terminal operator and vendor quality control inspections which occur continuously, Commission staff inspects each site at least once every eight weeks to ensure that project construction is consistent with the designs approved during the pre-authorization and pre-construction review phases.

During these inspections, Commission staff physically examines the entire site to verify the ongoing construction activities in each area. Staff confirms that the locations of individual process equipment under construction are in accordance with the approved site design, ensuring that the safe distances required between property lines, equipment, and facilities are being maintained. Staff verifies that all site activity and equipment

under construction comply with the conditions of the Order that are applicable for that phase of the project. Commission engineers also meet with the owner's project design engineers to discuss any modifications or design refinements that may result from the detailed design phase of development - for example, adjustments considered necessary as a result of equipment vendor specifications or other insights realized during construction.

In addition, staff reviews both the owner's and the EPC firm's quality assurance plans to verify that rigorous and stringent quality control inspections are being conducted by both parties during all phases of the construction process. Inspections must apply to equipment and components being fabricated at manufacturing sites, material and equipment received at the construction site, specific assembly or fabrication methods employed during construction, and also the continuous verification of the precision and quality of all structural work carried out during the construction process.

Staff reviews all of the non-conformance reports generated by the project's quality control inspectors and how these incidents have been satisfactorily resolved. These deviations from the intended quality of work are evaluated by FERC staff to ensure that the final quality of the work will meet or exceed design requirements. Problems of significant magnitude are required to be reported to the Commission within 24 hours.

During the later stages of the construction period, FERC staff monitors the EPC contractors' efforts to commission (*i.e.*, test and start-up) the various process systems and equipment throughout the terminal in preparation for the commencement of commercial operations. Commission staff is actively involved in the commissioning phase to verify that the final, constructed facility complies with the design authorized by the Commission Order, and that the project sponsor has complied with all conditions. This review

includes verification that all of the cryogenic design recommendations in the Order applicable to the facility's pre-construction and construction phases have been fulfilled. Multiple on-site inspections are performed to confirm the construction and location of all plant equipment, process systems, and safety systems, including:

- Verifying LNG spill control structures for completion of walls, piping, correct slope, size, materials used, sump pumps, and instrumentation for cold detection shutoff, and confirmation that proper materials have been used to complete containment;
- Checking critical instrumentation against the piping and instrumentation diagrams with the actual piping, valves, and controls; and the instrument readouts, controls, and alarm/shutdown functions in the plant control room;
- Confirming that all required hazard detection devices (combustible gas, fire, smoke, low temperature) have been installed, including an examination of the cause and effect diagrams and instrument locations for appropriate redundancy and "alarm" and "shutdown" conditions. The physical inspection also evaluates detector location and orientation for blind spots that may require additional hazard detection devices;
- Confirming that all dry chemical, carbon dioxide, or other fire extinguishing units/bottles have been installed. The devices are checked to confirm proper weight and areas have been covered;
- Confirming that all critical pressure relief valves have been installed, have proper discharge orientation, and vent collection systems are operable;

- Confirming that the entire firewater system is in place, including monitors, hydrants, pumps, screens, deluge and water supply, and has been tested for operation;
- Checking each LNG storage tank's equipment including elevation bench marks, rotational devices, liquid level gauges, pressure and vacuum relief valves, and discretionary relief valves for proper installation and confirming that all permanent covers have been installed. After cool-down, the fill lines and tank penetrations are inspected for presence of excessive low temperature conditions;
- Checking critical, required alarms and shutdowns, including set points (*e.g.*, tank foundation temperatures, send-out temperature shutdown set points) within the plant's control room and satellite control centers;
- Confirming that all temporary construction structures have been removed and the facility complies with National Electrical Code Division requirements; and
- Confirming that the plant's emergency shutdown system has been tested and is fully operational, including that all required systems have been tied into it.

Prior to operation, each LNG tank is hydrostatically tested to gauge the tank's ability to handle expected loads. During the hydrostatic test, the FERC Order will require the project sponsor to include a reliable measurement system to monitor any deflections in the tank foundation or structure during the hydraulic test. At a minimum, this system must include as many monitoring points as is necessary so that sag, warping, tilt, and settlements can be monitored. Tolerances for sag, tilt, and shell warping must meet or exceed the limits specified by the tank manufacturer. In this manner, the strength of the tank is thoroughly examined under loads similar to what will be experienced in actual



operation. The final design review will ensure that adequate plans for such testing are in place for all facility components.

As part of the pre-commission inspection, FERC staff also reviews the Start-up Manual, Safety Plan Manual, and Operations and Maintenance Manuals applicable to the installation. This review includes verifying that the terminal staff has received the necessary training to operate the plant or new systems, if an existing plant is being expanded. We confirm that the plant has employed the required staffing with a level and function appropriate for the facility.

FERC staff confirms that all plant security systems are in place (personnel, cameras, and other equipment), and that the Facility Security Plan is current. This review also includes confirming that all spare equipment that was authorized is on site and properly installed.

FERC staff also checks the entire facility site to ensure that all recommended environmental mitigation measures including erosion and sediment controls are in place, are being properly maintained, and that the company is making prudent steps to ensure that the site is properly stabilized for the operational life of the facility (*e.g.*, installation of shore line stabilization mats and rip rap).

Prior to operation, FERC staff also reviews the facility security to ensure compliance with the authorized design. Principal concerns are compliance with the DOT regulations, as well as sufficient levels of security provided by surveillance cameras; intrusion detection systems; security fencing; and on-site access control plans.

Only after all of the above-identified inspections and reviews have been successfully completed would FERC staff recommend that the terminal is ready for

operations. The Director of OEP must issue a letter to the company that authorizes commencement of service from the facility.

Prior to operation, the terminal must also satisfy other federal agency requirements. For example, the facility must have a Facility Security Plan approved by the Coast Guard and a Vessel Transit Management Plan prepared by the Coast Guard and port stakeholders.

FERC oversight continues after an LNG import terminal project commences commercial operations. In fact, the Office of Energy Projects was reorganized to specifically create a Compliance Branch that is dedicated to ensuring that all FERC requirements, including safety and security measures, are complied with throughout the life of the project. Each LNG facility under FERC jurisdiction is required to file semi-annual reports to summarize plant operations, maintenance activity and abnormal events for the previous six months. LNG facilities are also required to report significant, non-scheduled events, including safety-related incidents (*e.g.*, LNG or natural gas vapor releases, fires, explosions, mechanical failures, unusual over-pressurization, major injuries) and security-related incidents (*e.g.*, attempts to enter site, suspicious activities near the plant site or around the marine terminal), as soon as possible but no later than within 24 hours. In addition, FERC staff conducts annual on-site inspections and technical reviews of each import terminal throughout its entire operational life. The inspection reviews the integrity of all plant equipment, operation and maintenance activities, safety and security systems, any unusual operational incidents, and non-routine maintenance activities during the previous year. Ultimately, the Director of the Office of

Energy Projects has the authority to take whatever measures are necessary to protect life, health, property or the environment.

We are proud of our track record working with DOT, the Coast Guard, state agencies, and with all interested stakeholders on these projects, and we are committed to continuing the LNG industry's outstanding safety record.

#### **The Safe History of LNG Shipping**

In addition to ensuring safe and secure terminal sites, FERC coordinates closely with the Coast Guard to ensure the safety and security of the LNG vessel transit to the import facility. Under our pre-filing regulations, applicants are required to certify that they have submitted a Letter of Intent and preliminary WSA with the Coast Guard when initiating the pre-filing process. The WSA is reviewed by the Coast Guard and members of the local Area Maritime Security Committee. The Coast Guard generally convenes a working group consisting of members of the local Area Maritime Security Committee, federal agencies, state and local law enforcement, state and local firefighters, maritime and security professionals, and key port stakeholders throughout the port area.

Under Coast Guard supervision, this group, through a series of focused meetings, brings together its viewpoints to form a consensus on appropriate measures and mitigation needed to manage responsibly the safety and security risks posed by LNG marine traffic. At these meetings, FERC staff serves as the LNG technical advisor to the working group, provides insight from our participation in other waterways, and assists in identifying credible hazard scenarios. The group's detailed recommendations from the meetings are presented to the Coast Guard to assist in the Captain of the Port's review of the applicant's WSA. Based on its review, the Captain of the Port will make a

preliminary determination on the suitability of the waterway and present it to the FERC in a Waterway Suitability Report (WSR).

The WSR filed with the Commission, preliminarily determines whether the waterway is suitable for LNG vessel transits, from both a safety and security perspective, and identifies additional resources that may be required. The results of this analysis are incorporated into the draft EIS and released for public comment. The 45-day comment period usually includes a public meeting near the proposed facility and along the pipeline route. In this manner, after public comment has been received and the final EIS is published, the Commission has a complete record on the suitability of the waterway and potential resource requirements prior to deciding whether to approve a particular LNG import terminal.

Since the beginning of commercial operations in 1959, LNG carriers have made over 46,000 voyages worldwide without a significant release of cargo or a major accident involving an LNG carrier. In no instance has an LNG cargo tank been breached either by an accidental or intentional event.

Any LNG carriers used to import LNG to the United States must be constructed and operated in accordance with the International Maritime Organization's (IMO) *Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk*, the *International Convention for the Safety of Life at Sea*, as well as 46 CFR Part 154, which contain the United States safety standards for vessels carrying bulk liquefied natural gas. Foreign flag LNG carriers are required to possess a valid IMO Certificate of Fitness and a Coast Guard Certificate of Compliance.

LNG carriers are well-built, robust vessels employing double-hull construction, with the inner and outer hulls separated by about 10 feet. The LNG cargo tanks are further separated from the inner hull by a layer of insulation approximately one-foot thick. As required by the IMO conventions and design standards, hold spaces and insulation areas on an LNG carrier are equipped with gas detection and low temperature alarms. These devices monitor for leaks of LNG into the insulation between primary and secondary LNG cargo tank barriers. In addition, hazard detection systems are also provided to monitor the hull structure adjacent to the cargo tank, compressor rooms, motor rooms, cargo control rooms, enclosed spaces in the cargo area, specific ventilation hoods and gas ducts, and air locks.

Even in the few instances worldwide where there have been incidents, the integrity of LNG vessel construction and safety systems has been demonstrated. One of the more significant incidents involved the *El Paso Paul Kayser* which grounded on a rock in the Strait of Gibraltar during a loaded voyage from Algeria to the United States in June 1979. Extensive bottom damage to the outer hull and the ballast tanks resulted; however, the cargo tanks were not damaged, and no cargo was released.

There have been a few other instances where LNG ships have grounded. In 1980, the *LNG Taurus* grounded near the entrance to Taboata Harbor, Japan. The grounding resulted in extensive bottom damage, but the cargo tanks were not affected and no cargo was released. The ship was refloated and the cargo was unloaded. In 2004, the *Tenaga Lima* was grounded on rocks, due to a strong current while proceeding to open sea East of Mopko, South Korea. The ship's shell plating was torn open and fractured over an approximate area of 20- by 80-feet. Internal breaches allowed water to enter the

insulation space between the primary and secondary membranes. However, the ship was refloated, repaired, and returned to service. Although damage was incurred when these LNG ships were grounded, their cargo tanks were never penetrated and no LNG was released.

In another incident, the *Norman Lady* was struck by the nuclear submarine *USS Oklahoma City* while the submarine was rising to periscope depth near the Strait of Gibraltar in November 2002. The LNG carrier sustained only minor damage to the outer layer of its double hull but no damage to its cargo tanks.

More recently, the *Khannur* had a cargo tank overfill into the ship's vapor handling system during unloading at Everett, Massachusetts, in 2001. Approximately 100 gallons of LNG were vented onto the protective carbon-steel decking over the cargo tank dome resulting in several cracks. After inspection by the Coast Guard, the *Khannur* was allowed to discharge its cargo. In 2002, the *Mostaefa Ben Boulaid* had LNG spill onto its deck during loading operations in Algeria. The spill, which was believed to be caused by overflow, caused brittle fracturing of the carbon steelwork. The ship was required to discharge its cargo and proceed to dock for repairs. Although all these incidents resulted in an LNG release, there were no injuries in any of these incidents.

The most recent incident occurred in 2006 when the *Golar Freeze* moved away from its docking berth during unloading in Savannah, Georgia. The powered emergency release couplings on the unloading arms activated as designed, and transfer operations were shut down, preventing release of significant amounts of LNG or any structural or environmental damage.

After inspection and onsite clearance by FERC staff and the Coast Guard, the arms were reactivated and transfer operations resumed without incident.

The low number of LNG tanker incidents can be attributed to the careful handling of the tankers, as well as safety and security procedures used in the ports. The transit of an LNG vessel through a waterway is strictly controlled by the Coast Guard to prevent accidental or intentional incidents that could damage the vessel or endanger the public. Entry into a port typically involves Coast Guard requirements such as:

- 96 hours advance notification of arrival and the vessel crew manifest;
- Coast Guard boarding of the LNG Vessel for an inspection of the ship safety system;
- Moving safety/security zones around the LNG vessel;
- Armed and unarmed escorts;
- Tug escort to assist with turning and mooring operations;
- Safety and security zones around the terminal dock while the vessel is berthed;
- Accompaniment by a state-licensed pilot; and
- Inspection of the dock safety systems before commencing cargo transfer.

With these operational measures, the transit of LNG carriers has been demonstrated to be safe along the waterway from the berthing area to the territorial sea.

Although the history of LNG shipping has been remarkably safe, the projected increase of LNG imports into the U.S. has resulted in calls for continued research on the theoretical impact of a major spill. On March 21, 2007, the Government Accountability Office (GAO) issued Report No GAO-07-316: "Public Safety Consequences of a Terrorist Attack on a Tanker Carrying Liquefied Natural Gas Need Clarification." I am

encouraged that this report reached many of the same conclusions on LNG hazards which we have published in each FERC environmental impact statement. The findings of the GAO expert panel concur with FERC staff's assessment of the potential public safety consequences of a terrorist attack on an LNG tanker regarding:

- unconfined vapor cloud explosions;
- freeze burns;
- asphyxiation; and
- rapid phase transitions (RPTs).

These phenomena do not pose a significant hazard to the on-shore public during a large-scale LNG spill. Natural gas vapors (primarily methane) can detonate if contained within a confined space, such as a building or structure, and ignited. However, unconfined methane-air mixtures have been ignited but not detonated in experiments. Although the addition of heavier hydrocarbons influences the tendency of an unconfined vapor cloud to detonate, the possibility for detonation of a large unconfined vapor cloud is unrealistic due to precise timing, necessary mixing, and required amount of initiating explosives.

Similarly, the public is not at risk from freeze burns or asphyxiation. Clouds from an LNG spill would be continuously mixing with the warmer air surrounding the spill site. Dispersion modeling estimates that the majority of the cloud would be within 25 degrees Fahrenheit of the surrounding atmospheric temperature, with colder temperatures closest to the spill source and away from the public. In addition, the majority of the cloud would be below concentrations which could result in oxygen deprivation effects,



including asphyxiation, with the highest methane concentrations closest to the spill source.

The report also focused on potential impacts from RPTs. Our project-specific EISs include a discussion of this issue. While RPTs can occur during a spill on water, impacts would be limited to the area within the pool and would be unlikely to affect the public. The overpressure events observed during experimentation have been relatively small, estimated to be equivalent to several pounds of TNT. Although such an event is not expected to cause significant damage to an LNG vessel, it could increase the rate of LNG pool spreading and the LNG vaporization rate for a spill on water.

FERC staff also concur with the GAO report on the potential for a boiling liquid expanding vapor explosion (BLEVE). While it may be theoretically possible, the low storage pressure, use of insulation, and installation of relief valves on both onshore LNG storage tanks and LNG carriers render the possibility of a BLEVE unlikely for LNG as it is normally transported and stored.

The report further states that the most likely public safety impact from an LNG spill would be from heat associated with a pool fire. FERC staff has also analyzed this issue in the course of project specific reviews and has reached that same conclusion. In its 2004 report, Sandia considered scenarios likely to breach an LNG cargo tank. Events ranged from accidental collisions, groundings, rammings, sabotage, hijackings, attacks with small missiles and rockets, and attacks with bulk explosives. These types of events which could potentially lead to a large LNG spill would likely be accompanied by a number of ignition sources. Surrounding impacts would be from an LNG pool fire, and

subsequent radiant heat hazards, rather than the formation of a large unconfined vapor cloud. Each of our EISs describes those potential impacts on the local waterway.

As stated in the 2004 Sandia report, the most significant impacts to public safety and property exist within approximately 500 meters (1,640 feet) of a spill due to thermal hazards from a fire, with lower public health and safety impacts beyond 1,600 meters (approximately 1 mile). We believe the Sandia report and FERC's site-specific analysis are a reasonable and conservative basis to examine potential impacts from an LNG tanker fire.

The GAO study reports four experts thought the Sandia distance calculations were "too conservative"; four thought "not conservative enough"; seven thought "about right." Although the report characterizes this as disagreement, the majority of the panel (11 of 15) responded that the calculations were either accurate or overly conservative.

In each EIS, FERC staff includes site-specific modeling done with the methodology developed for FERC by ABS Consulting. In areas of uncertainty due to the lack of large-scale field data, the FERC model uses conservative assumptions (i.e., resulting in longer hazard distances). These conservative assumptions concern: calculation of the pool spread; determination of the pool fire flame height; and use of a higher surface emissive power. Our results have been in agreement with the Sandia guidance zones of concern, and support the conservative nature of the calculations.

Cascading failure of the LNG storage tanks, addressed by Sandia in its previous examination of currently operating LNG carriers, was another topic of disagreement among the experts. Sandia stated that the events would not likely involve more than two or three cargo tanks. As stated in the 2004 Sandia report, the nominal hole size of an

intentional breaching scenario would be no more than 5- to 7-m<sup>2</sup>, which is the appropriate range we use in the FERC staff EIS for calculating potential hazards from spills. For a breach of a 7 m<sup>2</sup> in a single tank, the fire duration would be approximately 10 minutes. Whereas smaller hole sizes could result in fires lasting over 1 hour. While the expected fire duration from cascading tank failure would increase, the overall fire hazard was not expected by Sandia to increase by more than 20 to 30 percent. GAO recommended that further study of this issue could be undertaken by Sandia. We concur that further study on cascading mechanisms may clarify if the subsequent failure of the fourth and fifth cargo tanks would occur over time with the most probable consequence of further extending the duration of the fire.

Related to cascading failure mechanisms are the effects such an event may have on a pool fire (i.e., whether it would increase the duration of the event, increase the size of the pool fire, or lower the radiant heat due to increased smoke generation). Current knowledge of the physical properties associated with an LNG spill are based on small-scale (<35 meter diameter pool) tests. How the data collected from small-scale pool fires can be extrapolated to the potentially large-scale cargo releases is a subject of much debate among the modeling community. Quantifying the physical properties of large-scale LNG spill should be a priority. This will allow analysts to refine the consequence models and generate more consistent results. Sandia currently has this effort underway with the Advanced LNG Pool Fire Testing Program.

Initial experimental results are expected in a few months, and the large-scale experiments are planned to be complete by August 2008. The initial results of these experiments will determine better correlations for the flame height and mass fire behavior

which could be expected during larger fires. The large-scale tests will result in better data on vapor production rates, smoke generation, and surface emissive power. In a separate effort, Sandia is also applying its threat analysis and spill probability methodology to LNG tankers larger than those previously studied. The research is designed to provide an estimation of the sizes of breaches, including hole size, spill volume, and number of tanks breached, for membrane-designed ship classes ranging from 216,000 m<sup>3</sup> to 267,000 m<sup>3</sup>. These are representative of LNG ships that are currently being designed, constructed and proposed for use at LNG facilities in the United States. Presently, each Order issued by the Commission requires the applicant to prove that staff's modeling of hazards for those large tankers is accurate. They must do this and get approval from the Director of OEP prior to accepting the larger size ships.

We will use this new data to enhance our modeling capabilities for determining possible consequence areas resulting from a successful intentional attack on an LNG tanker. FERC staff has always committed to modify our analyses, when appropriate, as new data and improved modeling technologies are developed.

I believe that this research is beneficial and necessary and will provide more exact information and technical details. Removing the uncertainty inherent in modeling phenomena will result in more accurate models. However, in current areas of uncertainty, we have made conservative assumptions. FERC staff believes the refined models will likely show smaller consequence areas. FERC, and along with it, the Coast Guard and DOT have a competent understanding of the risks and how to mitigate them effectively to ensure public safety.

**Commission Review Process for the Broadwater LNG Project**

Broadwater filed formal applications on January 30, 2006, to construct and operate an LNG import, storage, and regasification facility and a new offshore natural gas pipeline to connect to the existing interstate natural gas transmission system. Broadwater's proposal involves a floating storage and regasification unit (FSRU) that would transport up to 1.25 billion cubic feet per day (bcfd) of imported natural gas to the region that includes Long Island, New York City, and Connecticut. The Project would include a total LNG storage capacity of 350,000 cubic meters (approximately 8 bcf).

The proposed FSRU would be an offshore structure and would be regulated as a facility. For the purposes of the cryogenic design and technical review, the FSRU is essentially characterized as an LNG carrier with vaporization equipment onboard that would be moored at a fixed location. FERC and Coast Guard staff are evaluating the proposed facility on multiple equivalent design standards, including appropriate portions of 49 CFR 193 and NFPA 59A.

On November 4, 2004, Broadwater filed a request with FERC to implement the Commission's pre-filing process for the Broadwater LNG Project. At that time, Broadwater was in the preliminary design stage of the Project and no formal application had been filed with FERC. The purpose of the pre-filing process is to encourage early involvement of interested stakeholders, facilitate interagency cooperation, and identify and resolve issues before an application is filed with FERC. On November 29, 2004, FERC granted Broadwater's request.

On November 9, 2004, Broadwater submitted an LOI to the Coast Guard. The LOI initiated the Coast Guard's review of the safety and security of the proposed Project

as a part of its preparation of an LOR that would be issued for the Project by the Captain of the Port of Long Island Sound.

The proposed facility would incorporate design and engineering components of an LNG import facility and an offshore marine facility, as well as features similar to an LNG carrier. As a result, FERC and Coast Guard technical staff have shared the review of the facility by contributing their specific areas of expertise. In August 2005, FERC sent a letter to the Coast Guard requesting assistance in the analysis of the Broadwater Project. As stated in that letter, FERC would be the lead agency in conducting a cryogenic design review of the proposed facilities. The Coast Guard would review matters relating to the FSRU engineering and safety standards, as well as navigation safety and waterway suitability assessment for the carriers transporting LNG. Specifically, FERC staff would analyze the front-end engineering design for the LNG pumps and vaporization systems, process piping systems and vessels, process instrumentation and controls, process electrical systems, and other equipment normally reviewed for an onshore terminal. The Coast Guard staff would be responsible for assessing the design basis for the FSRU (including evaluating the standards and codes), oversight of the structural design review, and oversight of the mooring system design assessments by any contracted third-party reviewers. Both FERC and Coast Guard staff would jointly review items such as the general arrangement and equipment layout, storage tank design and construction, pressure relief and venting systems, emergency shutdown systems, spill control systems, and hazard detection and control systems.

As Broadwater's proposed FSRU would be similar to an LNG carrier, detailed design and construction of the facility would take place in a shipyard. Consequently,

FERC and Coast Guard staff have agreed that the review of this facility should use a process that is largely reliant on the procedures established by the Coast Guard for the review of deepwater ports. This process employs the Certifying Entity (CE) framework provided in Navigation and Inspection Circular 03-05 *Guidance for Oversight of Post-Licensing Activities Associated with Development of Deepwater Ports*. The CE would assist FERC and the Coast Guard staff in reviewing the appropriate codes and standards, the detailed design basis that would be used for the project, and the procedures for construction inspections of the FSRU, should the project be authorized by the Commission. After the extensive FERC Staff review of input during the pre-filing process, as well as FERC Staff review of comments received on the formal applications filed January 30, 2006, and after, Commission Staff issued the draft environmental impact statement (DEIS) on November 17, 2006. The DEIS included recommendations that Broadwater engage a qualified Certifying Entity for an independent review of the codes and standards development, detailed design, fabrication, installation, and operation of the proposed FSRU; and that Broadwater should maintain class for the life of the proposed facility.

In review of the proposed Broadwater FSRU so far, FERC staff have performed site specific thermal radiation and vapor dispersion modeling to calculate distances associated with different hazard scenarios associated with the FSRU. The calculated radiant heat distances reported in the DEIS do not impact any population centers due to the facility's distance from land. A similar analysis was used by the Coast Guard, along with the Sandia study, in its waterway suitability review and is reported in the WSR filed with the Commission on September 21, 2006. Based on their review, the Coast Guard

proposed a combined safety and security zone around the FSRU centered on the yoke mooring tower.

**Public Outreach**

Broadwater conducted a series of open houses on Long Island and in Connecticut in November and December 2004 and in April 2005 on Long Island. The purpose of the open houses was to inform agencies and the general public about LNG and the proposed Project, and to provide them an opportunity to ask questions and express their concerns. FERC and the Coast Guard participated in these open houses and provided information to the public on the joint review process of the Project.

On February 10, 2005, FERC formally introduced the pre-filing process to various Project stakeholders by issuing a notice of pre-filing process review for the Broadwater Project. This pre-filing notice was sent to approximately 2,200 interested parties, including federal, state, and local officials; agency representatives; conservation organizations; and local libraries and newspapers. On August 11, 2005, FERC issued its Notice of Intent to Prepare an Environmental Impact Statement for the Broadwater LNG Project, Request for Comments on Environmental Issues, and Notice of Joint Public Scoping Meetings (NOI). On August 16, 2005, the Coast Guard issued its Notice, Request for Comments; Letter of Recommendation, Proposed Broadwater Project, Long Island Sound in the Federal Register.

FERC's NOI was sent to interested parties, including many of the same interested parties as the Pre-filing Notice, as well as individuals and organizations who provided comments on the Pre-filing Notice. All of the notices issued by FERC and the Coast Guard encouraged Project stakeholders and interested parties to provide input on



environmental and safety and security issues that should be addressed during the Project review process. Both the NOI and the Coast Guard notice specifically requested comments by October 7, 2005; however, both FERC and the Coast Guard accepted comments throughout the time this DEIS was being prepared. FERC received more than 4,200 comment letters in response to the Pre-filing Notice and the NOI. Although many comment letters addressed specific environmental concerns, the majority expressed opposition to the Project with either general comments or without stating specific environmental issues of concern.

The Coast Guard received more than 2,300 letters from concerned parties. The majority of those letters expressed concerns about health and safety, security, public access, and industrialization of the Sound.

FERC and the Coast Guard conducted joint public scoping meetings at two locations on Long Island (Stony Brook and Wading River) and two locations in Connecticut (East Lyme and Branford) in September 2005. These meetings were held to provide the general public with an opportunity to learn more about the proposed Project and to participate in the analysis of the Project by commenting on issues to be included in the EIS and in the safety and security analysis.

In addition to the public notice and scoping process discussed above, FERC conducted agency consultations, participated in several interagency meetings and conference calls, and met with concerned agencies and non-governmental organizations to identify issues that should be addressed in this EIS. The Coast Guard participated at many of these meetings; coordinated with FERC's LNG engineering group to review safety and reliability issues of Project design; conducted a Ports and Waterways Safety

Assessment (PAWSA) workshop in May 2005; conducted a Harbor Safety Working Group meeting for the Broadwater LNG Safety Risk Assessment in December 2005; and established a subcommittee of the Area Maritime Security Committee to provide input to the Coast Guard's review of potential risks to maritime security. In addition, FERC and the Coast Guard have coordinated regularly throughout the review process.

On November 17, 2006, Commission Staff issued the DEIS on the proposed project. The DEIS was mailed to over 5,000 stakeholders including the agencies, individuals, and organizations who commented during the scoping process. The DEIS represents staff's preliminary findings, which are a result of two years of information-gathering. In developing the DEIS, staff carefully reviewed the potential impacts to each resource, consulted with the public, regional experts, resource agencies and technical literature. The DEIS recommended 79 highly detailed conditions to mitigate the environmental impact and assure public safety.

In January 2007, the Commission held joint public hearings with the Army Corps of Engineers and the Coast Guard, in Connecticut and New York to solicit public comment on the DEIS. Again, two meetings were held in New York (Smithtown and Shoreham) and two meetings were held in Connecticut (New London and Branford). Public participation in the meetings was very high. In January 2007, Commission staff also conducted a meeting with the Connecticut Long Island Sound LNG Task Force, their technical experts, and other state agencies and officials regarding the proposal.

To date, thousands of comment letters have been received. Although the 60-day comment period for the DEIS expired on January 23, 2007, Staff continues to accept comments. Staff will review all comments received, then prepare a final EIS that will

include responses to the comments received. The Commission will only take a position when the record is complete.

As stipulated by the Energy Policy Act of 2005, the governor of New York designated the New York State Department of Public Service (NYSDPS) as the state agency that FERC should consult with on safety and siting matters for the Broadwater Project. NYSDPS submitted its February 28, 2006 Safety Advisory Report to FERC. In the report, NYSDPS addressed state and local considerations for the Project and provided comments from the NYSDOS, the New York State Emergency Management Office, the New York State Department of Transportation, and the New York State Office of Homeland Security, as well as the comments of several local governmental entities (Suffolk County, the Town of Huntington, the Town of Riverhead, and the Village of Poquott).

The Energy Policy Act of 2005 stipulates that, before the Commission may issue an order authorizing an LNG terminal, it must “review and respond specifically” to the safety matters raised by the state agency designated as the lead for the state and local safety matters. Appendix A of the DEIS presented FERC’s response to the NYSDPS advisory report for the Broadwater Project.

#### **Issues Raised**

Next, I will discuss the principal issues that were raised during the process to date. From FERC’s perspective, public safety is always the greatest concern when reviewing a proposed LNG project. The people who have commented on the Broadwater LNG Project have also identified public safety as the top issue. The Coast Guard WSR found that with the adoption and implementation of additional measures needed to responsibly

manage the safety and security risks, the waters of Block Island Sound, Rhode Island Sound and Long Island Sound can be made suitable for LNG vessel traffic and the operation of the proposed terminal. FERC Staff's DEIS adopted the WSR and included it as an appendix.

Other primary issues of concern include potential limitations or modifications to public use of Long Island Sound. For example, the Coast Guard safety and security zone around the FSRU would exclude public access. It is the concern of many that operation of the Project would disrupt and conflict with traditional uses of Long Island Sound including commercial and recreational fishing, and boating.

Other use conflicts may occur as LNG carriers enter and exit the Sound through a natural deepwater channel called the Race. The Race is about 3.5 miles wide and extends from the southwestern tip of Fishers Island to Little Gull Island. Within that area, a shipping channel for deep draft vessels approximately 1.4 miles wide separates the Race Rock Lighthouse on the north (off the southwestern tip of Fishers Island) and Valiant Rock on the south. Most large commercial vessels enter and exit the Sound through this channel.

Because the carriers would also have moving safety and security zones around them, the concern is that the activities of other waterway users would be disrupted. However, LNG carrier transits would occur a total of about 4 to 6 times per week. Passage of the carrier and its zone past a fixed point would take about 15 minutes. At the most constricted point, the Race, the Coast Guard determined that there would be room available for use by other vessels when LNG carriers are passing through.

Commentors, including the Environmental Protection Agency (EPA), expressed concerns over air quality impacts. The EPA is a cooperating agency in the review of the Broadwater project. In a comment letter on the DEIS, the EPA suggested that the draft General Conformity determination in the DEIS lacked some critical information. We acknowledged this on page 3-171 of the DEIS and included a condition requiring that Broadwater provide the information. Broadwater has provided additional data that is currently under review by EPA and FERC staff. A formal draft General Conformity determination will be issued once all of the information has been reviewed and determined complete.

Visual impacts have been a concern from our initial review of the Project. Broadwater prepared a visual resource assessment, based on New York state guidelines. It has been reviewed and modified based on input from the New York State Department of Environmental Conservation, NYSDOS, and FERC. The terminal would be completely obscured from all coastal vantage points by haze or fog about 20 percent of the time. The greatest potential visual effect would occur on a clear day from a point on the nearest shoreline, which is more than 9 miles from the terminal, of the FSRU with a berthed LNG carrier. Due to the distance from the shore, the FSRU would be visible but would appear to be about the size of a small paper clip held at arm's length.

Concerns about the aquatic environment of Long Island Sound were also expressed. Most impacts to Long Island Sound would occur within the approximately 75-foot-wide corridor on either side of the proposed offshore pipeline. However, the construction techniques associated with the pipeline would affect even greater areas as construction barges and sea floor trenching would require anchors and cables that would

disturb the sediments and benthic organisms. In response, we have included a recommendation that Broadwater develop alternative procedures or use less damaging equipment to substantially reduce these impacts.

In total, the draft EIS included 79 site-specific measures designed to avoid or minimize the project's environmental impacts and concluded that the project would result in limited adverse environmental impact. As previously stated, there has been substantial public comment on the draft EIS. The next step will be review each comment received on the draft EIS, prepare specific responses, and revise or enhance our analysis as appropriate. At that point we will issue a final EIS.

#### **Conclusion**

In conclusion, LNG is a commodity which has been and will continue to be transported safely in the United States. The U.S. Coast Guard, the U.S. DOT and FERC are committed to ensuring that safety. As a matter of policy, the Commission is committed to continually raising the bar on energy infrastructure safety. As new safety measures, improved monitoring equipment, and enhanced safety and security protocols are developed, the Commission will ensure that LNG remains a safe and secure fuel source for the country.

This concludes my testimony. I will be happy to answer any questions you may have.

**Prepared Testimony of  
New York State Assemblyman Marc S. Alessi  
to the  
Congressional Subcommittee on Coast Guard and Maritime Transportation  
May 7, 2007**

My name is Marc Alessi. I proudly represent the 1<sup>st</sup> Assembly District in the New York State Legislature, which includes the towns of Shelter Island, Southold and Riverhead; as well as part of Brookhaven - including the North Shore, from Mt. Sinai to Shoreham. The residents of my district would be the unwelcoming neighbors to the Broadwater LNG terminal.

As you probably know, energy costs on Long Island are suffocating the hard working men and women living here. As a result, Long Islanders have been left with a sense of helplessness as they've seen their utility bills grow astronomically over the past five years.

Desperate as we are for relief, you would think a proposal that could save us upwards of \$300 a year on energy costs would be welcomed with open arms on Long Island. Yet, as Broadwater has discovered, it takes much more than unfounded savings claims to win over the Long Island public. If Broadwater assumed Long Islanders would be pushovers, they should have studied their history more carefully.

Just ask Wading River residents - who would have the indignation of living closest in proximity to the terminal - what happens when something of this magnitude is built despite overwhelming public opposition. They will direct you about two miles down the road to the never-opened Shoreham Nuclear Power plant, a shameful reminder of why heeding to public opinion is paramount in matters like this.

Numerous studies and reports have concluded that LNG terminal would not be a high-threat security risk. To me, however, the threat level is insignificant. The bottom line is: 9 miles off the North Shore of Long Island, there currently is no 216,000 square foot potential terrorist target. Should one be built, I don't think North Shore residents could ever live with full peace of mind, no matter how unlikely the chances it would be used in a terrorist strike.

One of my biggest worries is the cost of securing the terminal. Local municipalities – ones that I represent – would be asked to involuntarily put forth their own public safety resources to assist the Coast Guard in providing security. They're presently asking, and rightfully so, why should they be forced to foot the bill to secure private property? Worse, residents would see their tax dollars used to protect something that will provide the most benefit to ratepayers living 75 miles away in New York City.

Moving forward with this proposal opens the door for a handful of valid legal claims by multiple Long Island towns, as well as Suffolk County. In some cases, preliminary action has already been taken. Among their convincing arguments: FERC lacks the authority to permit a floating barge such as the LNG terminal; and also, Broadwater is blocked by numerous restrictions that prevent it from taking publicly-owned property. Broadwater should be fore-warned: Long Island will exhaust every legal argument to prevent this unwanted facility from being moored into our treasured Long Island Sound.

As I have said before, a 400 yard long monstrosity in the middle of Long Island sound would serve as a constant reminder for our children and grandchildren that when we should have been charting new energy policy, we instead elected to stick with a failed status quo. Our energy challenges can no longer be viewed in simple terms of supply and demand as the proponents of Broadwater would like us to.

It takes a new, alternative approach, one that I believe we are capable of envisioning and putting into policy. This commitment towards a better energy future is embraced by the Long Island public; and it is a sincere priority of our elected officials, with no finer example than the congressman before me, through whose efforts, today's hearing was made possible. We're making progress toward realizing that vision, slow progress at times, but we're moving in the right direction.

And yet, energy executives who could care less about Long Island's energy woes are trying to dictate what's best for us, a solution that just happens to serve well the interests of their corporate board room - 1,700 miles away in Houston, Texas.

This is our home. The precious waterway to our North is something that the people of Long Island cherish and do not wish to see industrialized. I will never support Broadwater. And along with my fellow elected officials, I will continue to fight to ensure Long Island Sound remains as we, the people of Long Island, want it.



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TESTIMONY OF  
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MARINE ENGINEERS' BENEFICIAL ASSOCIATION

U.S. HOUSE OF REPRESENTATIVES  
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE  
Subcommittee on Coast Guard and Maritime Transportation

HEARING ON SAFETY AND SECURITY OF LIQUEFIED  
NATURAL GAS AND THE IMPACT ON PORT OPERATIONS

BROADWATER PROJECT LONG ISLAND SOUND

May 7, 2007

TESTIMONY OF WILLIAM DOYLE  
Deputy General Counsel  
MARINE ENGINEERS' BENEFICIAL ASSOCIATION

May 7, 2007

HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE  
Subcommittee on Coast Guard and Maritime Transportation

HEARING ON SAFETY AND SECURITY OF LIQUEFIED NATURAL GAS AND  
THE IMPACT ON PORT OPERATIONS

Thank you Chairman Cummings and Ranking Member LaTourette, and thank you to the rest of the Committee for inviting me to speak before you today. I would specifically like to thank you for allowing MEBA the opportunity to discuss the unique issues we face in safely and securely transporting Liquefied Natural Gas to the United States.

My name is William Doyle and I am the Deputy General Counsel of the Marine Engineers' Beneficial Association and a U.S. Coast Guard Licensed Officer in the Merchant Marine. The MEBA is the nation's oldest maritime labor union, representing deck and engineering officers licensed by the United States Coast Guard. Our Officers serve in a variety of capacities in the commercial, government owned and operated, and domestic fleets, as well as in shore side employment at various terminals.

The MEBA was proud to take a leading role in the development of the transportation of LNG by tank vessels in the 1970s. Our members crewed U.S. flag LNG vessels until 2001. Today, however, not a single LNG tanker flies the American flag, and none of these vessels are crewed by Americans. We feel that this represents a serious threat to America, and we have been working to restore American mariners aboard this important segment of the maritime community.

Recently, however, MEBA has entered into a landmark agreement with LNG transporter, Excelerate Energy. Pursuant to this agreement, MEBA will be integrating its U.S. Coast Guard deck and engineering officers into its entire LNG tanker fleet and at its terminals. MEBA commends Excelerate and its foreign partners, Exmar, NV and Skaugen Terminals for their cooperation. This is also a result of the tremendous importance that Congress and agencies such as the Maritime Administration have placed on the issue of safe and secure transportation of LNG to the United States.

**Broadwater LNG Project**

MEBA has testified extensively at local public hearings in Connecticut and New York on the Broadwater LBNG project. MEBA provided expert testimony by several LNG shipboard deck and engineering officers on the safety and security of the transportation of LNG. The U.S. Coast Guard Licensed deck and engineering officers that have provided testimony are members of the MEBA and their testimony is a matter of public record.

The Broadwater project proposes to use a Floating Storage and Regasification Unit (FSRU). The FSRU is a floating receiving station that regasifies and stores the natural gas. For all intents and purposes the FSRU is a floating ship that does not have a propulsion system. The facility would consist of loading arms, piping and shutdown systems just like a land based terminal. Deck gear such as fenders, winches, and quick release hooks for the LNG carrier's mooring lines would also be located on the facility just like a land based port. The FSRU should contain a deck house for berthing consisting of living, dining, and recreation spaces. In addition, the deck house should contain command-and-control facilities, including monitoring and control instrumentation for LNG/natural gas processing activities, a ballasting system, communications, radar equipment, electrical generation, emergency systems, and thruster controls. There should be a command bridge space, located at the top of the deck house that would serve as a back-up location for the command-and-control functions, and be used primarily during docking/undocking of LNG carriers and other marine traffic-related operations.

In addition, the FSRU should be equipped with stern thrusters at the aft of the structure for heading control only. Although an FSRU could use its positioning thrusters to maintain a controlled forward speed of a few knots in light of weather conditions, it would be permanently moored to the seabed and therefore would not be used for navigation or transport.

Briefly, MEBA maintains that LNG can be transported safely. However, as discussed below the LNG tankers and the FSRU must be staffed by U.S. Coast Licensed and Certified Merchant Mariners.

#### **Oversight of LNG Terminals and Ports—Deepwater vs. Land Based**

The permitting of LNG import terminals generally fall into two categories, which are Deepwater Port and Land Based. With respect to oversight and permitting, primarily land based terminals are under the authority of the Federal Energy Regulatory Commission (FERC) who works in conjunction with the U.S. Coast Guard. Regarding Deepwater ports, they are under the authority of the Maritime Administration which also works in conjunction with the Coast Guard. The important distinction is that there is basically no oversight from a commercial shipping perspective over the permitting of land based LNG import terminals.

Briefly, the permitting of LNG Deepwater ports utilizes the U.S. Maritime Administration (MarAd) as the licensing agency. MarAd was granted this authority by Congress in 2002 through amending the Deepwater Port Act in the Maritime Transportation Security Act. In 2006, Congress again amended the Deepwater Port Act granting MarAd a larger role in the oversight of the commercial shipboard transportation of LNG. It first requires the Secretary of Transportation to develop and implement a program to promote the transportation of LNG to the United States on US-Flag registered vessels with U.S. citizen crews. That amendment further gives top priority to all applications for deepwater LNG import terminals that intend utilize US-Flag LNG

vessels. Finally, it requires that all applications for deepwater LNG import terminals specify the flag of the vessels and the nationality of the officers and crew that will be used to import the gas into the United States.

Indeed, it is critical to the safe and secure transportation of LNG that American mariners crew these LNG vessels entering U.S. ports. There is a severe worldwide shortage of LNG officers. This shortage is only expected to get worse. In addition, the training standards and qualification process of the foreign officers delivering cargo to the United States has generated enormous concern among shipowners, operators, classification societies and training entities.

The oversight and permitting of land based LNG terminals has not kept pace with the safety and security aspects that have been recognized as important to Congress with respect to Deepwater ports. This should be changed for the reasons discussed below.

Under existing law, the proposed Broadwater LNG Terminal is considered a land based facility under the permitting authority of FERC.

#### **Need for Shipboard Import of LNG to the United States**

According to the Federal Energy Regulatory Commission, U.S. natural gas demand is expected to increase by 40% by 2025 to 30.7 trillion cubic feet (TCF).<sup>i</sup> However, domestic supply, which has not equaled demand for many years, will only increase by 14.5 %. Without intervention, our natural gas supply will not keep pace with industry and the public's demand. Mr. Jeff Wright, Chief of the Energy Infrastructure Group, Office of Energy Project, Federal Energy Regulatory Commission cites the following reasons for this situation:

- Decline in the United States' underground domestic gas reserves<sup>ii</sup>;
- Canada's problems with flattening gas production in the Western Canadian Sedimentary Basin (WCSB) and its need to fulfill its own demands;<sup>iii</sup> and
- Continuation of Mexico's growing economy with Mexico keeping an increasing share of its natural gas to meet its future demands.<sup>iv</sup>

This means the United States cannot rely solely on natural gas produced in North America. Therefore, LNG will need to be imported to the United States on oceangoing LNG tankships.

#### **Need for U.S. Merchant Marine**

The U.S. Merchant Marine should play an integral role in the importation of LNG in order to ensure the utmost in safety and security that all United States citizens deserve. American mariners, in particular members of the Marine Engineers' Beneficial Association, are highly skilled in the operation of steam plants used on the majority of LNG vessels and are experts with respect to operating other marine power systems such as diesel, diesel electric and gas turbine. U.S. Merchant Mariners are also subjected to

rigorous background checks and competency requirements. In addition, the MEBA continues to train its members to the highest industry standards in LNG technologies.

Importantly, it is the policy of Congress that priority should go to using U.S. crews for staffing purposes on LNG tankers that deliver cargo to the United States. After all, major importing nations ensure the safe and secure importation of this vital energy source by utilizing citizen mariners from their respective nations -- the United States should do so as well.

In contrast, reliable crewing in the international LNG transportation market is reportedly in a tail-spin. It has been widely reported that international LNG ship operators are "poaching" qualified shipboard officers from each other through economic enticements. Constant crew changeover, poorly trained crewmembers and questionably qualified mariners undermine the efforts of a historically safety conscious LNG sector and pose an imminent threat to the safety and security of citizens located near or en route to LNG receiving facilities.

Transportation of LNG worldwide is a rapidly expanding marine service. This growth has never happened so quickly before, or in a segment of the maritime industry that is technically so different from other segments. The shipboard transportation of LNG has a great safety record. This is due in large part because it took approximately 40 years to for the international LNG fleet to reach 200 vessels. It may only take 5 more years for the LNG fleet to increase by 100 or more LNG tankers. Thus proper vetting and training are critical factors for consideration.

#### **Thorough Vetting of U.S. Merchant Mariners Provides Unmatched Shipboard and Port Security**

All LNG entering the U.S. is carried on foreign flag ships operated by either non-U.S. citizen mariners, or aliens who are not lawfully admitted to the United States for permanent residence. Unlike foreign seamen:

- U.S. Merchant Mariners receive their credentials to work from the U.S. Coast Guard;
- U.S. Merchant Mariners undergo extensive background checks performed by the Federal Bureau of Investigation;
- U.S. Merchant Mariners are background checked through a National Driver (vehicle) Record database;
- U.S. Merchant Mariners will also be subject to jurisdiction of the Transportation Safety Administration (TSA) where they will be vetted through a terrorist watch database in order to receive a Transportation Worker Identification Card (TWIC).
- U.S. Merchant Mariners are citizens of the United States or aliens lawfully admitted for permanent residence.

American mariners undergo a stringent and thorough vetting and credentialing process. Our Coast Guard-issued license is considered accurate (with regard to identity of the holder) and valid with respect to the qualifications and ability of the individual mariner.

Moreover, the document is relatively tamper-proof. Each mariner goes through an extensive background check by several federal agencies including the Coast Guard, Federal Bureau of Investigation and now with the TWIC coming into effect, the Transportation Security Administration.

While foreign mariners may be required to comply with their government's regulations as well as international standards, the validity of some of the credentials is suspect. A few years ago, International Transport Workers Federation President, David Cockroft, purchased an authentic Panamanian first officers certificate and sea book despite no practical maritime experience. The Seafarers' International Research Centre at the University of Wales investigated the issue of fraudulent qualifications. Its preliminary findings revealed 12, 653 cases of forgery in 2001

Federal and state government, local municipalities and the communities surrounding LNG import terminals can be assured, that with American mariners, the LNG vessels are manned by professional seafarers who have the integrity and the training necessary for the safe transport of LNG.

#### **Problems in Growth of Demand for LNG and with Incoming Generation of LNG Officers**

On June 20, 2006, Reuters reported that a growing global demand for liquefied natural gas and tight supply of specialized tankers and crew create a risk of dangerous lapses in standards of security. See, Darwin (Reuters), *LNG Demand Growth Risks Fall in Shipping Standards, June 20, 2006*.

Setting aside the security issue of foreign mariners, the United States must take into consideration the risks involved with poorly trained, insufficiently qualified and questionably vetted mariners who may deliver LNG to its shores. For instance, Yea Byeon-Deok, professor and LNG initiative coordinator of the International Association of Maritime Universities, recently stated at a conference in Australia: "Nobody knows what would happen if a significant accident occurred on a large LNG carrier. All we can say is that a 100,000 ton tanker has four times the energy potential of the atomic bomb used to hit Hiroshima. . . Many sub-standard vessels have begun to appear as demand for LNG increases, while there is a chronic shortage of experienced crew."

New orders for construction of LNG vessels imply a need for 3,575 officers over the next three years, Professor Yea said, of which 60% would need to be at senior or experienced level. Yea warned that "recruitment and training were falling *dangerously short of requirements to staff complicated vessels which could make dramatic targets for potential terror attacks.*" Reuters, *June 20, 2006*. Mr. Yea pointed out that the growth in "flag of convenience" ships which fly alternative flags to the country of ownership, allow the owners to avoid taxes, quality control and labor regulations which evidences deteriorating standards.

The younger generation of sea-going deck and engineering officers is withdrawing from the industry prematurely. These junior officers are showing less and less interest in continuing to go to sea and they are typically leaving for shore-side positions prior to taking on senior level seagoing positions. This has made it difficult for ship owners and operators to ensure a sustained supply of senior officers. There is as of yet no effective means to counter this tendency. This data is based on a report in the U.S. Coast Guard *Journal of Safety at Sea, Proceedings* regarding the international (non-U.S. Merchant Mariner) pool of shipboard officers.

The U.S. Merchant Marine was not considered in the aforementioned report. Indeed, had the U.S. Merchant Marine been considered, the resulting report would have shown that there is a vibrant and growing U.S. Merchant Mariner pool resulting in part by investments made in the passenger, freighter and tanker vessel maritime sectors. Moreover, it makes sense to staff LNG vessels delivering cargo to the United States with U.S. merchant mariners. U.S. merchant mariners are true patriots and care about their country-- they would not be "for hire" foreign personnel with little or no connection to America other than a job that provides a paycheck. U.S. Coast Guard licensed officers and crew provide answers and solutions to many of the safety and security concerns surrounding the importation of LNG.

**Wide Scale Officer Shortage is Resulting in Foreign Ship Operators  
"Poaching" LNG Officers; Poor Training; Steep Decline in Safety and  
Security; and Violations of International Law**

As reported in numerous articles and studies conducted by leading international maritime trade publications including *Tradewinds* and *Fairplay*, LNG owners and operators are lashing out at each other with allegations of "poaching", conducting insufficient training in violation of ISM Code as well as failing to properly check past employment references.

The sudden and sustained surge in global demand for liquefied natural gas and the worldwide shortage of mariners with LNG and steam experience is leading to predictable results. Ship managers seem willing to do whatever they can to get their ships fully crewed in the face of a growing wide-scale officer shortage. "The industry had previously grown slowly, so companies were able to train manpower and expand operations at a comfortable rate of two to three ships every two years," Keith Bainbridge, director of LNG Shipping Solutions, told *Fairplay* magazine in 2005 "But where an industry experiences 40-50% growth within a couple of years, it will split at the seams," he predicts.<sup>v</sup>

This manpower crisis is made even worse by new ship managers entering the LNG trade. A *Fairplay* article titled, *Poaching War for Crew Erupts*, cited the "voracious appetite for scarce manning resources, both at sea and onshore. This has created severe competition among LNG owners."<sup>vi</sup>

The Society of International Gas Tanker and Terminal Operators LTD (SIGTTO) has recognized the acute shortage and the reaction by some. “A short-term answer for an LNG vessel operator is to “poach” crew from another such operator but, clearly, the long-term answer is training, training, and further training. SIGTTO members, as much as anyone, wish for the quite unique safety record of LNG shipping to be preserved. The influx of new personnel into the industry is of concern, especially if there is a temptation by a minority of operators to “cut corners” and put officers into positions of responsibility on a LNG carrier before they have been properly trained.”<sup>vii</sup>

In an article titled *Officer Crunch Sparks Safety Alarm*, Anglo Eastern Ship Management’s training director Pradeep Chawla states that “intense pressure to promote more maritime officers is resulting in inexperienced officers making more mistakes and more dangerous situations on board. The training director noted that, “shortages have made it harder to retain officers because manning agents use higher wages to lure away experienced seafarers, especially in LNG/LPG and other specialized trades.”<sup>viii</sup> Moreover, not all companies train officers, with many resorting to poaching.

The crewing crunch is giving rise to new and dangerous theories of crewing to meet the sustained demand. “Some operators are contemplating an airline-style approach, training their crew units to ever-higher standards and frequently rotating them among vessels. That would fly in the face of an industry that had, until last year, been characterized by its conservatism on crewing and had viewed rapid crew rotation as a threat to safety.” The article mentions that with the shortage, there is an “increasing incidence of crews of strangers being cobbled together with precious little time to develop mutual trust and overcome their natural fear of blame.”

In an article titled *Near Calamities in Cargo Operations*, Fairplay details two case studies, on international vessel crewing practices, to illustrate the dangers of new crew members who are unfamiliar with the vessel or on-board procedures. “In both incidents, one of the factors that contributed to the near calamities was the fact that one or more of the crewmembers involved were new to the ship and unfamiliar with all aspects of the vessel.” “The importance of learning the idiosyncrasies of a particular vessel cannot be overstressed, and even when crew are transferred to sister ships they should not assume that every feature of the ships will be the same.” As noted above, short cuts in manning and “inventive” solutions to crew shortages can prove to be a recipe for disaster.<sup>ix</sup>

The consequences of crewing instability and poaching can also lead to serious deterioration of the relationship between mariner and management. “There has to be a management team in which officers can pick up the phone and discuss problems openly, rather than hiding them until it is too late” says Simon Pressly, GM of Dorchester Marine, an LNG vessel operator in a Fairplay article. The author continues with the observation that, “Unfortunately, with poaching so rampant, the dangerous lack of crew continuity is likely to continue until operators start making the requisite investments in manpower training.”<sup>x</sup>



Tradewinds states that the LNG-crewing shortage is giving rise to some serious shortcomings that are a direct threat to the industry's safety record and are in violation of the International Safety Management (ISM) Code. Some operators and ship managers are employing senior-level ship's officers that were terminated from employment by competing companies due to poor performance and substance abuse<sup>xi</sup>.

On another front, big international shipping companies and ship management firms are feeling the LNG crewing pinch. Some operators are enticing LNG shipboard officers to switch companies by offering wages at 30%-40% higher than what has been paid in the past—and officers are switching companies and leaving their former employer in crisis. Some companies are offering over \$18,000 a month (in wages only, not including benefits) to attract qualified LNG officers<sup>xii</sup>.

All decision makers and stakeholders involved with the importation of LNG to the United States must take notice of what is going on in the international market. With growing natural gas demands and some 50-plus applications on the books for LNG import terminals, the American people need to be assured that the most highly trained and experienced personnel are transporting security sensitive LNG to the United States. There is no room for error when it comes to liquefied natural gas. Like no other time in history, the economics are in place whereby the U.S. Merchant Marine can economically and safely deliver LNG cargo; provide a stable pool of mariners for the long term; provide the highest amount of training; and comply with all U.S. and international laws.

**International Consequence: Insurance Underwriters Deeply Concerned with Inexperienced Crews Aboard LNG Vessels**

A recent article titled *LNG Ships Facing Premium Boost* details the nervousness of the insurance industry as the LNG fleet suffers through poorly managed growing pains. "Underwriters appear to be changing their view of LNG vessels, which have traditionally been regarded as particularly well managed, despite being costly and potentially hazardous." Now, higher insurance premiums are the prospect for LNG vessel owners as a result of "a big deterioration in the claims record of the world gas fleet." Marsh, the largest insurance brokering group issued a report concerning claims of more than \$400 million run up by the LNG fleet.<sup>xiii</sup>

Higher insurance premiums are in prospect for owners of LNG carriers after a spate of claims including operational incidents have left insurance underwriters facing big losses according to Marsh.<sup>xiv</sup> Marsh reports that risk profile is increasing due to a shortage of crew with LNG experience.<sup>xv</sup>

With 200 LNG vessels in service and over 100 on order, Marsh identifies a number of factors associated with the rapid growth as adding to the risk profile of the gas-ship fleet including shortage of crews with LNG-carrier experience and new owners entering the market with the intention of trading vessels on the spot market rather than traditional long term charters.<sup>xvi</sup>

The shortage of mariners in the international fleet is dire. It is abundantly clear, therefore, that the U.S. Merchant Marine must enter the market.

**International Reaction: Responsible Shipping Ministries React to Manning Shortcuts and Abuse; Use of National Flag Vessels Promoted By Major Importers**

The worldwide shortage of mariners and the severe competition among ship-owners is leading to drastic cuts in manning with sometimes fatal results. An article titled, *Modern Seafaring Can Kill You*, notes the rising rates of suicide, murder and poor health among Indian seafarers and details India's response on behalf of its mariners. India's director general of shipping, GS Sahni believes that severe competition has compelled international ship-owners to cut down on manning. "Crews that numbered 50-55 few years ago have now come down to just 20 or less. Stress and fatigue has become a part of seafarer's tough life. With total strength of 15, there's no time for the floating staff to interact with each other since they are kept busy all the time and there is no peer sense." Captain MM Saggi, a nautical advisor to the government of India, says that stress and fatigue have led to several incidents of suicide, murder or seafarers going missing. "Ship-owners employ fewer seafarers, otherwise they feel they run the risk of going out of business. A situation develops where some employ fewer persons, yet keep whipping the crew and using them as slaves."

An official from the Indian shipping directorate notes that, "Indian ships do not face such problems because seafarers have their unions and as a result of the large manpower available, there is 20-25% more persons on board." A similar approach is taken in the U.S. by the Coast Guard in tightly regulating the minimum required number of mariners to safely operate a vessel under U.S. flag. The certificate of inspection (COI) ensures that proper manning of vessels for both the safety and security of the vessel and its cargo. However, in the international shipping business, the flag flown over the stern (registry) determines the wages paid and the minimum standards followed. As the Indian example shows, some registries promote a lowest common denominator where strict employment and environmental standards no longer apply. This underscores the importance of the choosing the right people, both shoreside and at sea, for the sensitive job of carrying LNG to our coasts.<sup>xvii</sup>

India's Shipping Ministry also took the lead in requiring Indian manning and Indian registry for LNG vessels importing to the Indian coastline. For the time being, the Indian Ministries of Commerce and Petroleum & Natural Gas has prevailed in the internal battle, handing India a set back in its efforts to build a domestic flagged LNG fleet. However, Some of the world's largest importers of LNG, Japan and Korea, are an increasingly powerful consumer of LNG, have made registry of LNG ships a matter of national maritime policy. "Japan transported about 43% of its total LNG import of 59.1 million tons in 2003 on Japanese owned and controlled ships. Similarly, Korea transported about 61% of its LNG imports of 19.3 million tons in the same year on Korean controlled ships. In the combined import of Japan and Korea, third-party owned ships constituted only 8.3 percent," says a shipping industry representative.<sup>xviii</sup> It is notable that Japanese and

Korean controlled vessels are in respectable registries and do not cut corners on crewing in order to compete on the world market.

India's Shipping Ministry has attempted to rejuvenate its merchant marine by requiring Indian manning and Indian registry for LNG vessels importing to the Indian coastline. However, another branch of the Indian government, the Indian Ministries of Commerce and Petroleum & Natural Gas, has prevailed in the internal battle, handing India a set back in its efforts to build a domestic flagged LNG fleet.

#### **Superior Domestic Maritime Resources: Calhoon MEBA Engineering School**

The Marine Engineers' Beneficial Association operates a world renowned training facility, the Calhoon MEBA Engineering School (CMES), in Easton, Maryland. The school is fully accredited and certified by the U.S. Coast Guard and Det Norske Veritas (DNV). The MEBA School provides LNG training to organizations such as the U.S. National Transportation Safety Board and Transportation Safety Board of Canada & Transport Canada.

The MEBA training facility trains both deck and engineering officers and has recently installed a cutting-edge Bridge Simulation System designed and built by TRANSAS USA. The simulator is one of the newest and most sophisticated systems in the world. The interactive program allows students to simultaneously control simulated ships utilizing any of 56 different types of vessels in over 20 different ports. In addition to the ten ships that can be controlled within one scenario, instructors can further intensify the simulation by implanting multiple computer-controlled ships into the scenario. Unlike many existing bridge simulators, each station, operating a different type of vessel (including LNG vessels), can interact with every other station simultaneously. The LNG cargo simulation program allows students to dock, load and discharge LNG vessels. Moreover, the computerized system even encompasses the terminal-side operations of an LNG facility. It accommodates upgrades to adapt to ever-evolving Coast Guard and International Maritime Organization training and testing requirements.

The Calhoon MEBA Engineering School (CMES) prides itself in developing and offering courses before the need becomes apparent in the US marine transportation industry. Relevant courses meeting today's LNG training needs include Tankship Liquefied Gases (LNG). This course has been part of the MEBA training core since 1975. It provides U.S. Coast Guard Licensed Deck and Engine Officers with the knowledge to safely and efficiently transport LNG. This LNG course is a USCG prerequisite for employment aboard LNG carriers. The class includes comprehensive lecture, lab work, and computer training as well as LNG science, engineering systems, cargo systems, stability, and safety. This course complies with the IMO Code for the LNG Vessels.

#### **XII. Conclusion**

With 97% of all cargo imported to United States being carried on vessels that are not registered under the American-Flag and not crewed by U.S. citizens, one would think that

the safe and secure transportation of security sensitive cargo would be a serious concern. More to the point, at this time 100% of all Liquefied Natural Gas that enters the United States is carried on ships staffed by non-U.S. citizen mariners. The MEBA strongly believes that the use of American mariners is a critical component to the safe and secure importation of LNG to the United States.

With this in mind, some responsible corporate citizens in the LNG sector have recently agreed to expand their crewing practices to include U.S. citizen crews on LNG tankers. These companies, Suez LNG/Neptune, Excelerate/Northeast Gateway and Freeport-McMoRan, must be commended. We must also praise Maritime Administrator Sean Connaughton and the Maritime Administration for their efforts to promote American mariners on LNG tankers. Without their help, the progress made with these companies would have been much more difficult.

We look forward to working with Congress and the Administration moving forward to further protect our communities and maritime infrastructure.

Respectfully,  
/S/  
William P. Doyle

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<sup>i</sup> Annual Energy Outlook 2005, Energy Information Administration, U.S. Department of Energy, February 2005, Table 13.

<sup>ii</sup> Mr. Wright cites the Annual Energy Outlook 2005, Energy Information Administration, U.S. Department of Energy, Table 13, which reaches the conclusion that production from conventional underground gas deposits is projected to decline between now and 2025. This decline is somewhat offset by increased gas production from non-conventional domestic gas sources (most notably coal-bed methane), increased production from deep water sources (greater than 200 meters) in the Gulf of Mexico, and commencement of deliveries of Alaska gas to the lower 48 states. The Alaskan volumes are problematic according to Mr. Wright, because there has been no application to construct necessary infrastructure to transport the gas, and the timeline from application to first delivery is approximately 10 years.

<sup>iii</sup> The National Energy Board of Canada states, the Western Canadian Sedimentary Basin (WCSB) accounts for more than 90% of the gas production in Canada and for about 23% of North American natural gas production annually. In the last few years, gas production from the WCSB appears to have flattened after many years of growth, leading to increased uncertainty about the ability of industry to increase or even maintain current production levels from the basin over the longer term. See, Canada's Conventional Natural Gas Resources: A Status Report, National Energy Board, April 2004, pp. 9-10.

<sup>iv</sup> Exports of gas to Mexico have increased greatly in the last few years. These exports do not constitute a large out-flow of gas at present. However, the Mexican economy is growing and if it continues to grow, its demand for natural gas will increase and require the United States to import an increasing amount of gas to meet, not only domestic needs, but also the needs of Mexico. In other words, what Mexico imports and shares today by way of natural gas, Mexico may not be able share later. Jeff Wright, Chief, Energy Infrastructure Policy Group, Office of Energy Project, Federal Energy Regulatory Commission, Fall 2005.

<sup>v</sup> *Poaching War for Crews Erupts*, Fairplay International Shipping Weekly, February 24, 2005.

<sup>vi</sup> *Id.*

<sup>vii</sup> SIGTTO News, September 2005, p.5.

<sup>viii</sup> *Poaching War for Crews Erupts*, Fairplay International Shipping Weekly, February 24, 2005.

<sup>ix</sup> *Near Calamities in Cargo Operations*, Fairplay International Shipping Weekly, December 1, 2005.

<sup>x</sup> *Poaching War for Crews Erupts*, Fairplay International Shipping Weekly, February 24, 2005.

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<sup>xi</sup> *LNG Crewing Shock*, Tradewinds, February 25, 2005

<sup>xii</sup> *Philippines Dangles \$18,000 Carrot*, Tradewinds, January 9, 2006; See also, *LNG Wage Anger*, Tradewinds, November 4, 2005; *Officer on \$320,000 a year, claims Sigto*, Tradewinds, November 4, 2005.

<sup>xiii</sup> Tradewinds, *Insurers Get LNG Jitters, LNG Ships Facing Premiums Boost*, March 17, 2006

<sup>xiv</sup> *Id.*

<sup>xv</sup> *Id.*

<sup>xvi</sup> *Id.*

<sup>xvii</sup> *Modern Seafaring Can Kill You*, Fairplay International Shipping Weekly, April 20, 2006

<sup>xviii</sup> *Foreign Flag Vessels May Bring Down LNG Import Costs*, The Hindu Business Line, December 13, 2005.