Report on Potential Economic and Fiscal Impacts on the Town of Harpswell, Maine of the LNG Terminal Proposed by TransCanada Pipelines and ConocoPhillips

Prepared for

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February 3, 2004

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"Fishing, shell-fish production, boat building, boatyards and marinas, kayaking, restaurants, motels and other overnight accommodations, real estate and the resulting construction of new homes; all of these businesses and others here in Town are dependent on the relationship with the sea. The expansion of some of these activities has put a strain on the others and on the well being of the marine environment. Waterfront development increases storm water runoff; shorefront construction increases the potential for pollution; pleasure boats and fishing boats compete for favorable mooring locations; the use of pesticides and fertilizers threatens the marine ecosystem and the fishing done therein; and public or fishing access to the water is being reduced by the changing nature of the community. 'Everything relates to everything else,' but in Harpswell everything relates to the ocean."

-- Municipal Government of the Town of Harpswell, Maine Draft 2003 Comprehensive Plan

INTRODUCTION

Why is a LNG terminal being proposed for the Town of Harpswell now?

Supply and Demand

The supply of U.S. gas is declining faster than projected, while domestic demand continues to increase.[1] The gap between supply and demand is causing prices to rise. The U.S. Energy Information Administration (U.S. EIA) predicts that total U.S. demand for natural gas will outstrip supply by about 5 trillion cubic feet by 2020. The largest increase in demand for natural gas in the United States is expected to be in the East.[2]

Recent improvements in engineering and construction have brought liquefied natural gas (LNG) production costs down by as much as 30 percent.[3] Advances in technology have substantially lowered the costs of liquefying (the most energy-intensive part of the process), regasifying, shipping, and storing natural gas.[4] Supplies of natural gas heretofore considered stranded due to distance from markets are now accessible. As a result, according to the U.S. EIA, LNG is expected to play an increasingly important role in the natural gas industry and energy markets in the next several years.

The industry agrees. "Bring on the LNG" is the headline of an article published June 13, 2002 in *Alexander's Gas & Oil Connections*. "Plenty in the industry are taking a bullish view on gas and LNG. LNG has come a long way. And it is poised to finally come into its own as a small but significant portion of the U.S. gas supply portfolio, internationalizing the North American gas market along the way." The LNG delivered to a Harpswell Terminal will come from foreign countries.

In response to current and projected market conditions, all four LNG import terminals in the United States have plans to expand, and there are approximately 18-20 new import terminals in the planning stages. The LNG terminal in Hackberry, Louisiana is the first new LNG terminal to receive authorization from the Federal Energy Regulatory Commission in over 20 years. It is anticipated to take up to five years to place the project in service.[5]

The annual sendout capacities of existing U.S. LNG terminals, including expansions planned for 2005, are as follows: Everett, MA Terminal – 334 BCF (billion cubic feet); Lake Charles, LA – 428 BCF; Cove Point, MD – 365 BCF; Elba Island, GA – 294 BCF. The anticipated start-up volume for the proposed Harpswell terminal is .5 BCF per day or 182.5 BCF per year.[6] The memorandum of offer between the Town of Harpswell and Fairwinds, the name given by TransCanada Pipelines and ConocoPhillips to the Harpswell project, includes potential expansion to 1 BCF per day or 365 BCF per year or more. There is no cap on expansion in the Memorandum of Offer which simply states, "In the event applicable permits so permit there shall be no increase in excess of an average annual figure of 1 BCF per day without a reasonable and proportional adjustment in the Lease Fee." Based on anticipated operating capacity at similar facilities and strong market demand, there is every reason to believe the Harpswell facility will expand to 1 BCF and beyond, if permitted to do so.

Harpswell's Location

The primary siting criteria from a company perspective for an LNG terminal are:

1. A channel depth of a minimum of 40 feet sufficient to accommodate LNG ships of 75,000 to 135,000 cubic meters. However, 42 feet is a preferable depth. Larger ships may require more depth. It is not clear whether the depth of the Harpswell channel will be sufficient to accommodate LNG ships without dredging. If dredging is required initially, it will likely be required repeatedly as the channel refills over time.
2. Proximity to interstate natural gas pipeline systems. The Harpswell site is within 20 miles of the existing pipeline if ten miles of marine pipeline is used, and within 35 miles if only overland pipeline is used.
3. The third criterion is constant access to multiple regional markets. The existing pipeline system will carry gas to major markets outside of Maine, thus satisfying this criterion.
4. Construction in non-populated places. Compared with Boston, Harpswell is sparsely populated, yet accessible by boat and vehicle.

From the company perspective, it is clear what makes Harpswell a desirable location for an LNG terminal.

Secondary siting criteria used by companies include: air quality (will the terminal affect the area's attainment status with EPA?); aesthetics (degree of visibility, number of potential viewers, compatibility with existing viewshed); land use/socioeconomics (compatibility with existing land use, compatibility with surrounding land uses, compatibility with probable future land uses); site development requirements; noise; safety and reliability (thermal exclusion and vapor dispersion zones on site, site accessibility to public, security requirements).[7] The secondary criteria will be addressed from the community perspective in appropriate sections of this report.

Barriers to Successful Siting of LNG Terminals

In several instances, in the U.S. and elsewhere, the industry has not been able to overcome barriers associated with siting of LNG terminals on priority sites. In their paper, *Greenfield LNG Import Terminal Approvals*, authors Weems and Keenan suggest that public opinion and the permitting process are two major obstacles. For example, in 1973, a terminal proposed for Deer Canyon, California was rejected due to public safety concerns.[8] More recently, El Paso let their option lapse on a Radio Island, North Carolina site for a proposed LNG terminal due to local opposition, despite some municipal support.[9] Shell and Bechtel pulled out of a Mare Island LNG facility proposal in Vallejo, California due to local opposition.[10] There is considerable local opposition to the LNG terminal proposed for Baja California coast, in Mexico.[11] In September 2003, the City Council of Fall River, Massachusetts voted 7-2 to oppose an LNG terminal in their city.[12] On December 8-10, 2003, at an industry conference in Boston to discuss the challenges of East Coast LNG, one of the questions to be considered was, "What are the practicalities of landing more LNG on the East Coast given local resident concerns about safety, security and environment, and what are the challenges of integrating LNG into the East Coast gas distribution system?"[13]

What is Harpswell's vision of itself?

The Town of Harpswell was incorporated in 1758 and has been inhabited continuously since. Harpswell Neck, the proposed location of the LNG terminal, is described by the Town as a thin finger of granite and schist, pine and rolling meadows dotted with classic 19th century homes, a scattering of working farms, white churches of architectural perfection, and the no-nonsense front yards of the Neck's scores of working lobstermen. Fishing and shipbuilding have been the historic mainstays of the economy. In recent years, recreation, tourism, and second home development have played an increasing role in Harpswell. [14]

A town vision of itself and its preferred future is reflected in its town plans. We have reviewed the 1993 Update of The Harpswell Comprehensive Plan, currently valid, and the Draft 2003 Comprehensive Plan, currently under review. The introduction to the 1993 Comprehensive Plan states, "The Comprehensive Plan … is an expression of the community's vision of its future. It is a guide to making the many public and private decisions that will determine that future…It is the legal foundation on which to build the Town's land use controls and a road map that can be used by the Town's elected and appointed officials to steer the Town on an agreed-upon course."

The 1993 Update of the Harpswell Comprehensive Plan set forth a number of goals with respect to General Growth and Development. Among them were:

1) De-emphasize the community as a growth area for the region because of the natural limitations of Harpswell's soils, groundwater, and physical geography and its remoteness from major employment opportunities.

2) Direct future growth to areas that do not have valuable marine resources, groundwater quality or quantity problems, or soils unsuitable for septic disposal.
3) Assure that the character of the Town is maintained as the community grows by:
    a. Keeping the scale, including height, and intensity of new development suitable for the existing character of the Town;
    b. Protecting the scenic quality of the Town along the shorefront, main roads, and in other areas of outstanding beauty;
    c. Protecting the Town's ties to the sea;
    d. Encouraging traditional local employment opportunities.
4) Preserve the character of the Route 24, Route 123, and Cundy's Harbor and Mountain Road corridors.

How well does an LNG terminal fit with Harpswell's vision of its future?

In contrast to the 1993 Plan for preserving the character of Harpswell, the proposed LNG terminal will target Harpswell as a regional growth area, particularly during the multi-year construction phase of the project; direct growth to a shoreland site with valuable marine resources and groundwater quality problems; alter the scale of development by permitting two 130 foot towers with a footprint of approximately 1.6 acres each, an extended dock, and regular entry and egress of large tankers through Town waters; alter the scenic quality along the shorefront; interfere with traditional local employment opportunities particularly in the fishing and tourism industries; and change traffic levels on Route 123.

Existing Concerns

The Sections on Land Use Growth and Development, Marine Resources, Public Access, Public Facilities and Fiscal Capacity, and Water Quality and Quantity in the 2003 Draft Comprehensive Plan describe current conditions that will be impacted by the proposed LNG terminal. These conditions include: limited public access to the shoreline combined with competing demands for recreational and commercial use of accesses; limited and vulnerable groundwater supplies strained by development pressure; aging fire and rescue volunteers and the absence of younger recruits; loss of school-age population; the need to preserve and protect outstanding views and vistas; deteriorating condition and inadequate maintenance of Route 123; areas closed to shellfish harvesting due to pollution of flats; and the potential need for a public works department, a town manager, and changes to other aspects of town governance and administration to accommodate growth.

Past Use and Plans for the Fuel Depot site

In 1952, the U.S. Department of Defense obtained land in West Harpswell for the purpose of a fuel depot supplied by tankers. In the early 1990's, DOD decided to ship fuel by road to the nearby military base and abandoned the fuel depot. During the period of active use of the fuel depot and subsequent to its abandonment, residential development grew up around the depot site. The area around the site is significantly residential, with some small, home-based businesses. The area feels like a distinctly residential, quiet neighborhood. The Harpswell Neck Fire Department is an adjacent

property as well. At a Special Town Meeting in June 1997, the following article was approved:

"The Town of Harpswell will use the Defense Fuel Supply Point (Casco Bay) land and buildings for the sole benefit of the Town. Such use will provide for multiple, complementary purposes. These purposes may ultimately include conservation, recreation, marine occupations, town landing and dock, and marine research including aquaculture. The allocation of specific land or buildings to specific purposes will require a supplementary vote of the Town. Environmental remediation shall permit such purposes, as approved by the Maine Department of Environmental Protection, to the extent such approval is required. Implementation of this policy by the Town shall be undertaken progressively in a manner consistent with the financial capability of the Town."[15] None of the possible recommended uses for the site include heavy industry.

In 2001, the future of the Depot property and its value to the Town was described as follows: "The Depot property is an incredibly valuable parcel of prime real estate in Harpswell's midst. It is important for the town to accept ownership and control. The property's value – 118 acres of open space and 2,600 feet of coastline – is priceless in today's marketplace, let alone the future."[16] In 2001, Harpswell accepted the transfer of the fuel depot property from the federal government to the Town.

With respect to the Fuel Depot site, prior to the Amendments offered to the 2003 Draft Comprehensive Town Plan, the Plan called for the Town Planner and Fuel Depot Committee to "continue efforts to attract new business development to the Fuel Depot site that would provide positive financial benefit to Town, jobs for local residents, and development complementary to the natural environment…. Support use of the fuel depot property, in part, for public access to the ocean," and to provide "important new recreational opportunities." Again, there is no mention of large scale heavy industry.

Over the past several years, the Fuel Depot Property has been used by the Town as a recreational site. In September 2003, a "Celebrate Harpswell Picnic" was held on its "spectacular shores."[17] A 1.5 mile shared-use path and a half mile of woods trail have been developed on the site.[18] There is no development in the vicinity of the site, or indeed in the Town of Harpswell, that is similar in scale and nature to the proposed LNG Terminal.

Although TransCanada and ConocoPhillips claim that "leasing a portion of the fuel depot to the venture will address a major liability the Town will have relating to repairing the deteriorating structures on the site and remediating residual contamination if other tenants were found to lease parts of the site,"[19] this statement is misleading. In reality, extensive studies to determine the extent of site contamination were carried out in the late 1970's, followed by a series of site remediation activities. Groundwater at the site remains contaminated, though ongoing monitoring suggests the extent of contamination is decreasing. There are no plans to tap into the groundwater resource at the site unless and until such time as it meets state and federal standards. The U.S. Department of

Defense remains responsible for any future problems caused by its occupancy, as long as the need for remediation is not the result of actions of future occupants of the property.[20] Existing levels of remediation permit a range of practices as described above. Requirements for any additional remediation would be determined based on proposed use and negotiated at that time, and would need approval from the Maine Department of Environmental Conservation. The Fuel Depot parcel is a significant asset for the Town of Harpswell.

What is the commitment the Town is being asked to make?

Lease Agreement

The Town of Harpswell is being asked to vote on whether or not to authorize its Selectboard to sign an irrevocable binding lease with TransCanada Pipelines and ConocoPhillips that would grant them the right to use the former Fuel Depot property to develop and operate an LNG Import Terminal for 50 years. An LNG Terminal is a heavy industrial use not previously permitted on Harpswell's shores.

If the Town of Harpswell signs this lease there will be no way out, except in the case of serious breech by the companies, or if Harpswell elects to pay a minimum of $5,000,000 plus all sums expended or invested by the companies in connection with the LNG facility and this Lease (dating back to the companies' earliest involvement), plus any removal and remediation expenses during the permitting period.[21] If Harpswell wishes to terminate the lease during the operations period, it will have to pay the fair market value of the LNG facility (that may be considerably more than the cost of construction, currently estimated at $350,000,000), plus any removal and remediation expenses.[22] Any serious breech by the companies that would lead to termination will have to be proven through arbitration. Harpswell will be responsible for one-half the costs of arbitration, plus all its own legal fees and the cost of any and all expert witnesses required in trying to prove the breech.[23] There is no guarantee that Harpswell will prevail through arbitration.

The lease is a precondition that the companies have established for moving forward with their project. The detailed studies required to fully understand the environmental impacts of the project will not be conducted until <u>after</u> the community agrees to the project. All of the project descriptions provided to date by the companies are subject to change based on findings uncovered during the permitting process. Until the true dimensions of the project are established, it is not possible to accurately assess the full range of economic and fiscal impacts.

To accommodate this proposal, the Town has proposed significant changes to its Draft 2003 Comprehensive Plan and its Zoning Ordinances. In addition, the Town has proposed a Tax Increment Financing District (TIF) specifically for the Fuel Depot property.

Changes to Comprehensive Plan

The proposed amendments to the Town of Harpswell 2003 Comprehensive Plan include the removal of a Resource Protection Area and the creation of a Shoreland Industrial Growth Area at the Fuel Depot site.

Changes to Zoning Ordinance

Proposed amendments to the Zoning Ordinance[24] would establish a previously non-existent Shoreland Industrial District, defined as the area that meets the following criteria: (i) those areas that are currently or have been used at any time since June 25, 1974 for large-scale petroleum product storage, petroleum product transfer facilities or industrial docking or port facilities; and (ii) the area designated as the Shoreland Industrial District on the Official Shoreland Zoning Map. Industrial is defined as the assembling, fabrication, finishing, manufacturing, packaging, or processing of goods; the extraction of minerals; or natural gas product off-loading, storage, processing or distribution, including, without limitation, any power generation, desalinization and regasification facilities directly related to such natural gas activities. This shall in no case include the processing of fish or marine life. Processing of such goods shall be considered an acceptable commercial fish use. An exception to a maximum structure height of 30 feet is made for natural gas product storage, handling, processing or other related industrial structure in the Shoreland Industrial District or property adjacent thereto, where any such storage and handling structure shall not exceed 130 feet in height.

Clearly, the zoning changes are designed to accommodate the construction, operation, and potential expansion of the proposed LNG Terminal at the Fuel Depot site and do not reflect the historic scale or character of pre-existing development along Harpswell's shores. Each of the proposed LNG storage tanks, measuring about 300 feet in diameter and 130 feet in height, will have a capacity of 160,000 cubic meters, greater than the 150,000 cubic meter capacity of all 28 of the storage tanks used previously by the Fuel Depot combined. The capacity of the two proposed LNG storage tanks will be more than twice that of the combined capacity of all 28 tanks previously used at the site[25].

The graphic below illustrates the difference in scale between one of the two proposed LNG storage tanks and a 30' x 40' residence.

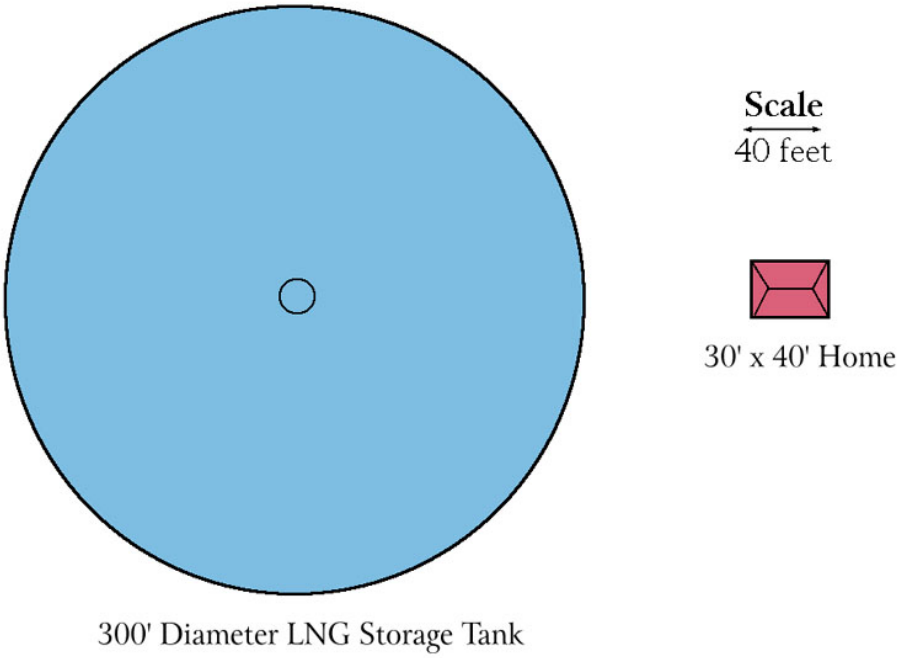

Figure 1: Relative Size of LNG Storage Tank

Tax Increment Financing District and Credit Enhancement Agreement
The Town of Harpswell Fairwinds Municipal Development District Tax Increment Financing District Development Program (TIF), released in December 2003 by the Town of Harpswell, proposes an arrangement whereby the Town assesses taxes against the LNG Terminal property based on the value of improvements created by the companies. The companies then pay the amount of assessed taxes to the Town. The Town then returns 100% of this amount to the companies in the form of TIF payments, and the companies then pay the money back to the Town as a "supplemental lease payment". It appears that through this arrangement, the Town of Harpswell is attempting to use the TIF to exclude the added value of the LNG Terminal from the town's valuation in order to preserve current levels of general municipal revenue sharing and state education subsidies. The TIF would also enable the Town of Harpswell to avoid paying the taxes to Cumberland County that would otherwise be due based on a $350,000,000 increase in the Town's valuation. It would also enable the Town of Harpswell to avoid an increase in its share of SAD 75's costs under the District's cost sharing formula which is based 50% on the valuation of member towns.

The purpose of a TIF, according to the Maine Department of Economic and Community Development, Municipal and State Tax Increment Financing Rule, is as follows:

> *The municipal and state tax increment finance programs are designed to assist municipalities in encouraging industrial, commercial, or retail development, increasing employment opportunities, and broadening tax bases.*

A TIF works by establishing a geographic development district within which all or some of the value added to the tax base by development is set aside from the rest of the Town's valuation, and the tax on that additional value (the tax increment) is used to invest in the capital and financing costs of a project, infrastructure within the development district, necessary off site infrastructure, and/or other economic development activity in the Town. The tax increment is typically spent by a municipality, by one or more companies in the TIF district, or some combination of the two.

Every year the municipality must provide the state with a report on: 1) the extent to which public improvements and project plans outlined in the development program have been completed; 2) the extent to which debt incurred in implementing the development program has been retired; and 3) any other information specifically requested by the department.[26]

Harpswell's development program as described in the TIF proposal consists of having TransCanada Pipelines and ConocoPhillips use the entire tax increment to make a supplemental lease payment to the Town with no further controls over the way the money is spent. By structuring the TIF and the lease so that the property taxes on the value of the LNG development are simply returned to the Town in the form of additional lease payments, it appears that the Town is attempting to preserve current levels of state education subsidies and general municipal revenue sharing and to avoid any increase in county taxes and contributions to SAD #75 as a result of the increased valuation from the LNG facility. In this respect, the proposed TIF does not appear to be consistent with the intent of the TIF law. In the absence of a meaningful development program, Harpswell's proposed TIF provides no accountability to citizens of the Town or the State of Maine regarding how the funds will actually be spent. Further, by law, TIF payments may not be used to circumvent other tax laws[27], including county tax obligations.

The tax increment could be allocated to TransCanada Pipelines and ConocoPhillips to offset development costs at the site or for off-site infra-structure, but this is not the approach the Town has taken. If the Town were to do so, it would amount to giving the companies a tax break of an estimated $81 million over 30 years.

If the proposed TIF were disallowed by the State of Maine, or if it were invalidated on legal grounds, an estimated $350,000,000 would be added to Harpswell's tax base by the year in which construction is complete. This is an estimate only, as the actual costs of construction are unknown at this time and may change up or down based on permitting requirements, technological developments and other factors. Without the TIF, as Harpswell's valuation increased, so would its tax obligations to Cumberland County. The increased taxes which would be owed to the county are estimated in the TIF documents at an annual average of $579,878 or $16,236,586 over 30 years. In addition, if the TIF were disallowed, SAD #75 would lose state education subsidies in an amount estimated in the TIF documents at an annual average of $397,311. The Town of Harpswell would also lose general revenue sharing in an amount estimated in the TIF

documents as an annual average of $48,916. These estimates combine to $1,026,105 per year. In addition, if the value of the development were not excluded from Harpswell's Town valuation by the TIF, Harpswell's share of the costs of SAD 75 under the district's cost sharing formula would increase substantially since 50% of the districts local costs are allocated to its member Towns on the basis of the town valuations. Data obtained from the Maine Department of Education suggests that the effect of the TIF will be to shift approximately $950,000 per year in education costs from the Town of Harpswell to the State and the other three towns in SAD #75.

Several statements in the Town of Harpswell TIF document require further examination. For example, the document states that the TIF is "critical to insure (sic) the future viability and success of this proposed Harpswell business." This is part of the argument typically made for establishing a TIF yet, in this instance, no data whatsoever is provided to support this statement.[28] The TIF document also states, "No persons will be displaced by development activities." Again, no substantiation is provided to this standard claim, although there are good reasons to believe occupational, economic, and property value displacement will occur.[29] Similarly, the TIF document states the Fairwinds project will "create minimal demand for local services"[30] which is simply not accurate. According to the TIF document, by adoption of the TIF, the town expects to "strengthen diversification of the municipal tax base," yet the purpose of the TIF appears to be to remove the value of the developed property from the tax rolls for 30 years. At the end of that period, or whenever the companies cease to operate an LNG Terminal at the site, the understanding is that they will return the site to its pre-development condition, thus negating the value of development. How then does this contribute to strengthening and diversifying the tax base of the Town?

What are the key components of the proposed LNG Terminal?

The LNG project will occupy around 68 acres of the 118-acre Fuel Depot site. The LNG Import Terminal proposed for Harpswell has been described by TransCanada Pipelines and ConocoPhillips as including the following components:

1) a new dock extending approximately 800 feet into Casco Bay including equipment for offloading LNG.
2) two LNG storage tanks, each measuring about 300 feet in diameter and up to 130 feet in height. Each tank will have a footprint of 1.6 acres. Each tank will store up to 160,000 cubic meters or roughly 40 million gallons of LNG.
3) regasification facilities capable of processing a daily throughput of .5 billion to 1 billion cubic meters of natural gas per day.
4) desalinization plant producing approximately 5,000 gallons of freshwater per day from 20,000 gallons of saltwater.
5) 9 MW gas-fired power plant to meet facility needs.
6) unspecified support buildings.
7) connecting natural gas pipeline extending either under Casco Bay to Cousins Island and then over land or entirely over land.

8) double-hulled tankers of capacities up to 200,000 cubic meters of LNG and dimensions of approximately 900-1,000 feet in length and 150 feet in width.

Tanker Traffic

If standard-sized ships carrying 125,000-138,000 cubic meters of LNG are used[31], each ship would provide about 2.6 – 2.8 BCF of natural gas, and it would take 65- 70 ships to deliver 182.5 BCF per year (182.5/2.6 or 182.5/2.8). Assuming it takes each ship 24 hours to unload, there would be a tanker at the Harpswell dock one day out of every 5 and a half days on average year round. If the capacity of the LNG Terminal is expanded to a throughput of 1 BCF per day as is likely, it would require 131-141 ships to deliver 365 BCF per year (365/2.6 or 365/2.8). This would mean that there would be a tanker at the Harpswell dock one out of every approximately two and a half days on average year round.

If larger tankers, carrying 200,000 cubic meters are used, each ship would provide approximately 4.16 BCF, so it would take 44 ships to deliver at minimum production and 88 ships to deliver at maximum production. This would be one ship at the dock every eight days at minimum and one ship at the dock every four days at maximum. However, 200,000 cubic meter ships are still in the design stages and are not currently available, and may not be in sufficient supply once the Harpswell facility comes online. Deliveries also may not be evenly spaced, but may instead correspond to market demand, which is strongest in summer and winter.

Depending on the size of the LNG tankers used, there would be tankers in the shipping lanes from a minimum of 88 days to a maximum of 282 days per year, entering or exiting Harpswell's waters during daylight hours.

The size of LNG tankers used is also likely to affect the need for dredging in Casco Bay; this will not be determined until after the Town of Harpswell agrees to sign the lease. According to the nautical map of Casco Bay developed by the National Oceanic and Atmospheric Administration's (NOAA's) National Ocean Service Coast Survey, the depth of the channel along the anticipated route for LNG tankers is wire-dragged to exactly 42 feet over much of the proposed length, with the exception of the area near the dock and where LNG tankers would be turned around, where the wire-dragged depth is recorded as 31 to 35 feet. A typical LNG tanker requires a channel depth of approximately 40 feet for safe passage, whereas a 200,000 cubic meter tanker requires a minimum channel depth of over 42 feet. [32]

LNG Transport by Truck

The project, as described to date, does not involve transporting LNG from Harpswell by truck. In fact, "any movement of LNG to or from the LNG Project by truck or any other means besides LNG Vessel except for small quantities (such quantities not to exceed 100 gallons in any movement) used for non-commercial purposes" is one of the general negative covenants of the lease in section 11.1.1. There are at least two circumstances under which this might change. One scenario is if there were to be a real or perceived

problem with the natural gas pipeline. Real problems could be caused by an operator, a construction error, corrosion, or, most frequently, damage by outside forces such as a dragging anchor at sea or an excavation on land.[33] Perceived problems could be caused by a malfunction in sophisticated mechanisms used to detect pipeline failure, such as SCADAs (Supervisory Command and Data Acquisition Systems), robotic pigs that inspect from inside the pipeline, and/or sensors to detect leaks.[34] As those of us that use computers on a daily basis know, the potential for error and malfunction in sophisticated hardware and software applications is very real. Should there be a perceived or real problem with the pipeline, distribution of LNG may need to occur by truck. LNG trailers typically carry around 11,000 gallons each. It will take many, many trailers to transport even a small fraction of the LNG coming into Harpswell. If a load were to arrive when the storage tanks were full, one way to handle the situation would be to offload to trucks. Tankers must offload their cargo within a certain period of time, since a percentage of the extremely cold liquid burns off each day, making long hauls at sea unprofitable.[35]

The second situation in which LNG might be transported through Harpswell by truck would be if TransCanada Pipelines and ConocoPhillips were to expand into the growing niche market for LNG as a vehicular fuel. The demand in this market is typically met by truck deliveries.[36] It seems unlikely, given the lease covenant, that the companies have any intention of pursuing this market, though that could change over the 50 year period covered by the lease.

Secondary Development

No mention has been made of electric generation facilities or additional industrial development that would utilize natural gas either at the site or adjacent to it, although such facilities exist at most LNG import terminals. Electric utilities are the largest users of natural gas in the United States, and TransCanada Pipelines is in the power services business as well as the business of pipelines.

Project Schedule

According to TransCanada Pipelines and ConocoPhillips, the regulatory and permitting phase of the project will occur between February 2004 and February 2006. It is only during this period that the actual dimensions of the project will be established. Construction is anticipated between March 2006 and February 2009. Both the facility and the pipeline will be constructed during this period. Pipeline construction is anticipated to take 14 to 17 months. Approximately 900 workers and numerous pieces of equipment will be traversing and occupying Harpswell's waters and shores during this three-year period. The operation phase is anticipated to start in March 2009 with an indefinite period of operation thereafter.

What are the major components of potential impact?

We have been asked to examine two major categories of impact of the proposed LNG terminal: fiscal impacts and economic impacts. Fiscal impacts include impacts on

the costs and revenues associated with town government. Economic impacts include impacts on income, employment, assets, and livelihood of Harpswell residents.

FISCAL IMPACTS

What is the fiscal condition of Harpswell as a community?

As of 2002, at $9.15 per 1000, Harpswell had the lowest property tax rate of any town in Cumberland County, and one of the lowest tax rates in the State of Maine. The value of land in Harpswell, $506,333,988, exceeds the value of buildings, $321,854,874, because so much of the land in Harpswell is shorefront property. The value of shorefront property, including the Depot site, is the Town's most significant fiscal asset. Land itself is a scarce commodity in Harpswell; of the Town's total area of 83.92 square miles, only 24.17 is land and the rest is water. Anything that threatens the value of Harpswell's land also threatens the long-term fiscal health of the community.

The Town's outstanding debt as of May 2003 was $2,207,500 or 0.26% of its valuation, well within the legal bonding limit of 15% of valuation.[37]From a fiscal standpoint, the community as a whole is not stressed. However, the rapid and significant rise in property values has created stress for individuals and households whose property tax bills have increased over the years. The State of Maine provides three remedies for those with limited ability to pay property taxes. The first is the Homestead Exemption, the second is the Circuit Breaker Program linked to income, and the third is the option of applying to the Town for a poverty abatement.

Approximately 72% of the revenues ($5,502,871/ $7,612,528) collected through property taxes go to Maine School Administrative District No. 75 (MSAD #75) to pay for education.[38] Harpswell's school-age population is decreasing.[39] State law allows school districts to cost-share on the basis of either assessed value or pupil count or a combination of the two.[40] Costs for MSAD #75 are currently shared on a 50/50 basis, 50% based on assessed value and 50% based on pupil count. It may be appropriate for Harpswell to renegotiate the basis on which costs are shared among towns in SAD #75. However, attempting to address perceived inequities in education funding through encouraging development of an industrial disamenity is a "solution" likely to cause more problems than it solves.

The major determinant of fiscal stress in a community is the balance of available revenue to costs required to provide desired services. We will begin by assessing some of the additional costs that are likely to attend the development of an LNG Terminal. Then we will assess the anticipated impact of the Terminal on property values. Finally, we will assess the impacts of the TIF approach on Harpswell and surrounding communities.

What impact will the LNG terminal have on the cost of providing town services?

There are several areas of municipal infrastructure and services that may be affected by the proposed LNG Terminal, including police, fire, emergency response, roads and personnel.

Town Government and Staffing

Harpswell is currently governed by three part-time Selectmen who also serve as the town Assessors in a Selectman/Town Meeting/Administrative Assistant form of government. The 2003 Draft Comprehensive Plan notes, "With growth, the task of governance and administration becomes more complex and time-consuming. The Town should discuss possible changes to governance and administration to better serve residents." One identified area of need is for a public works department within the Town government to ensure continuity and experienced oversight of such functions as capital planning, road improvements, snow removal and road maintenance among other functions. Another is for increased staff to address code enforcement issues. A third is in improving public safety/emergency response, including addressing the aging of fire and rescue volunteers and the lack of younger recruits. Another need may be to separate the Assessor and Selectboard functions, and to hire a full-time Town Manager.

In addition, the 2003 Draft Comprehensive Town Plan considers investment of public funds for creation of advanced community wastewater systems, community wells, trails, open space, and roads to encourage growth to occur where, when and how it deems appropriate. Community wells and wastewater systems are especially needed given the limitations of groundwater availability and the relative ease of contamination as described by the Plan. "Narrow peninsulas and numerous islands with the ocean ever near and exposed bedrock only thinly covered with meager soils result in a fragile water resource that can be easily compromised. The result is that the Town's water resources are susceptible to contamination from seawater, failing septic tanks, petroleum, road salt, and other contaminants."[41] These are all pre-existing needs that will be exacerbated in a few short years by the impacts of the proposed LNG Terminal. Meeting these needs will increase the costs of providing municipal services in Harpswell.

With additional stress on town and state roads in Harpswell, there may be a need for a roads department staffed with full-time personnel. An already overwhelmed harbormaster position, currently part-time, may need to be made a full-time position. The addition of an estimated $8 million to the town budget is likely to require additional personnel to manage the projects that may be administered with that funding. If part of the $8 million is invested, there may be additional need for financial personnel in the town office, a full-time Treasurer, or, at minimum, a contractual relationship with an investment advisor. In addition, the agreement with TransCanada Pipelines and ConocoPhillips may require additional personnel simply to monitor compliance with the lease agreement. The communications tower to be built by the companies on the property is expected to be maintained by the town. This, too, may require additional staff time or personnel or a contractual relationship with a qualified firm.

Safety and Security

Public Cost of Security

"The Coast Guard Program Office estimates that it currently costs the Coast Guard approximately $40,000 to $50,000 to "shepherd" an LNG tanker through a delivery to the Everett terminal, depending on the duration of the delivery, the nature of the security escort, and other factors. State and local authorities also incur costs for overtime police, fire and security personnel overseeing LNG tanker deliveries. The state of Massachusetts and the cities of Boston and Chelsea estimate they spent a combined $37,500 to safeguard the first LNG shipment to Everett after September 11, 2001.

Marine security costs at other LNG terminals could be lower than for Everett because they are farther from dense populations and may face fewer vulnerabilities. But these terminals expect more shipments. Assume an average security cost only half that for Everett, or $25,000 per shipment.

State and local agency costs are largely incremental, as they are mostly overtime labor charges for law enforcement and emergency personnel. These local resources could also be deployed in other public service or conserved altogether, especially in communities with tight budgets."[42]

It should be noted that local surrounding municipalities bear a portion of the cost of providing safety and security services in other communities in which LNG terminals are located.

What might this mean for Harpswell? If local law enforcement and emergency personnel must be on duty whenever an LNG tanker is arriving, departing, or at dock, there will be price tag associated with this service. If we assume a security cost per shipment of $25,000 as suggested above, and we further assume that half that cost is borne locally, while the other half is borne by the state, it will cost the Town of Harpswell approximately $12,500 every time a tanker unloads at the LNG Terminal. If there are 44 to 141 ships per year, depending on the size of ship and the volume of daily production, this would mean an added local cost of between $550,000 and $1.76 million dollars per year. This is in addition to the underlying requirement for more police and emergency personnel on an ongoing basis.

Local Emergency Response

Federal regulations require that liquefied natural gas facilities promptly notify appropriate local officials of an emergency and the possible need for evacuation of the public in the vicinity of the LNG plan; coordinate with appropriate local officials in preparation of an emergency evacuation plan, which sets forth the steps required to protect the public in the event of an emergency, including catastrophic failure of an LNG storage tank, and cooperate with appropriate local officials in evacuations and emergencies requiring mutual assistance and keep these officials advised of emergency equipment at the plant, potential hazards at the plant, and communication and emergency control capabilities at the plant.[43]

The companies are responsible for protecting the site, notifying appropriate state and local authorities and cooperating with them; however, local emergency planning is the responsibility of the local community and the state. If Harpswell is to host an LNG Terminal, a local emergency response plan will be needed. The companies will be required to notify local responders in the event of an emergency, but the community will be responsible for preparing and testing its own emergency response plan. Communities with chemical plants have fulfilled this requirement through a Local Emergency Planning Committee to address public perceptions of risk.[44] However, an effective local emergency response plan goes well beyond addressing public perceptions of risk.

The U.S. Nuclear Regulatory Commission's *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants* provides a model of local capabilities required for an effective emergency management plan. The *Criteria* make it the responsibility of State and local governments to activate a system of timely notification and instructions to the public within a plume exposure pathway. This includes both transient and resident populations. Written instructions are also required, as are 24 hour a day notification and activation capabilities along with periodic testing of the communications system. Coordinated programs to distribute information to the public and the media must be conducted at least annually. Local government is expected to establish and maintain an emergency operations center for use in directing and controlling response functions, and to stock emergency kits. Provisions for evacuation routes and transportation for onsite individuals, including impaired individuals, to some suitable offsite location, including alternatives for inclement weather, high traffic density and specific emergency conditions are also required. This will be a particular challenge for Harpswell given the layout of the transportation network and the lack of alternatives to Route 123.

The recommissioned LNG terminal in Cove Point, Maryland sits within two miles of nuclear power plant for which emergency planning was already required. Nonetheless, Calvert County, home of the Cove Point plant, has hired an additional person to prepare county emergency plans to address risks associated with the LNG facility.[45] Owners of the LNG facility in Cove Point do not cover the costs of local emergency planning. In Harpswell, local emergency management plans will need to be developed from scratch and tested through notification and evacuation drills. The cost of plan development as well as the cost of such drills to the community in terms of organization, mobilization, and work-time lost should be taken into account. Emergency planning costs will accrue not only to Harpswell, but to Cumberland County and the State of Maine as well.

Police Protection

With 900 additional people coming to Harpswell in just the facility's construction phase, there will be a need for additional police protection. In addition, ships coming in anywhere from every two and a half days to every nine days, requiring enforcement of a safety zone around the ship, may require additional police protection on land and on the water. The Town of Harpswell currently has a contract with the Cumberland County

Sheriff's Office, for two marine patrol deputies and three land-based law enforcement deputies, covering 20 hours of each day. In the summer months, an extra deputy is in Harpswell full-time for twelve weeks at a cost of about $13,000. This complete contract costs the town $361,586 which breaks down to about $100,000 per deputy. A deputy chief estimated that, given the elements and plans for the proposed LNG facility, this contract might have to be changed to double the personnel covering the Town of Harpswell, for both law enforcement and marine patrol. He also estimated that another boat may have to be procured. The marine patrol deputies for Harpswell currently have a small boat, which is under 20 feet. If marine patrol may have to cover waters outside of the clam beds (which is currently their main task), they may need a substantially larger boat. [46]

Fire Protection

In the area of fire protection, the director of the Maine Emergency Management Agency is recommending that the fire provision in Harpswell would need 4-6 full-time professional firefighters, presumably with first response or emergency medical training. [47] Based on a 2003 survey by the *Journal of Emergency Medical Services* (see Table 1)[48], average starting salaries for emergency response personnel range from $26,000 to $58,000, depending on their responsibilities. This could mean anywhere from $104,000 - $348,000 in salaries alone. Benefits could run anywhere from $31,200 to $104,400.

Table 1: 2003 Journal of Emergency Medical Services (JEMS) EMS Salary and Workplace Survey

	Annual Starting Salary	Change from Last Year	Annual Salary Top	Change from Last Year
Executive Director/Chief	$58,017.96	-0.6%	$73,997.60	3.8%
Administrative Director/Chief	$52,626.70	14.6%	$69,489.47	14.1%
Operations Manager/Chief	$52,076.71	-4.5%	$64,653.11	-5.8%
Division Manager	$53,445.60	5.1%	$62,170.00	2.7%
Training Officer	$45,946.46	3.8%	$57,987.03	3.5%
Public Information Officer	$44,627.86	8.9%	$59,952.14	7.8%
Medical Director	$41,775.20	5.0%	$48,219.07	-2.9%
Quality Management Director	$49,324.32	41.3%	$60,928.77	40.9%
Communications Manager	$45,843.97	-7.9%	$62,328.12	-4.9%
Communications Supervisor	$35,772.25	-18.2%	$48,242.54	-13.0%
Field Supervisor	$47,409.39	7.7%	$58,291.02	14.4%
EMT-Paramedic	$32,419.69	6.8%	$42,858.90	4.2%
EMT-Intermediate	$26,092.85	-3.6%	$35,118.01	-4.6%
EMT-Basic	$27,315.55	7.5%	$35,698.38	-2.0%
First Responder	$30,357.10	4.6%	$40,258.65	-15.0%

According to Hobson's College View[49], most firefighters make between $22,000 and $41,000 a year. Salaries in New England are fairly comparable. In East Hartford, Connecticut, for example, an employment ad for a firefighter/paramedic quoted a salary range of $40,000-51,793[50]. In Augusta, Maine, the top pay scale for a firefighter is

$30,400, with a stipend of $3,042 as a paramedic. The average with overtime pay is $39,260. Chiefs can make $56,412 with overtime pay.[51] In Concord, New Hampshire, the full-time chief makes $45,000, [52] while in Plaistow, the fire chief makes $49,000[53]. A Boston firefighter makes on average $43,112, while fire chiefs in and around Boston make over $100,000[54]. Finally, in Bedford, New Hampshire, 2002 salaries were as follows: $27,378-36,946 for firefighter/EMT Basic; $29,115-40,134 for firefighter/EMT Intermediate; $31,976-41,244 for firefighter/EMT Paramedic; $37,826-53,126 for lieutenant/EMT Intermediate/ and $40,566-56,031 for lieutenant/EMT Paramedic[55]. Employees of local governments tend to make more than those in state or federal jobs.

The fire department that serves Harpswell Neck, the Irving F. Chipman Station, is one of the abutting properties of the site and therefore at risk should there be an accident. The Town should consider re-locating the fire department to enhance security and ensure the availability of emergency services in a site and/or tanker-related emergency.

School Capacity and Relocation

In terms of school capacity, the Maine School Administrative District No. 75 (MSAD #75), which encompasses Bowdoin, Bowdoinham, Topsham and Harpswell, is in fine shape. With an overall capacity of 4,401 students at its six elementary schools, middle school and high school, the current enrollment is 3,383. Mount Ararat High School is currently at capacity, using three temporary, portable buildings. The MSAD No. 75 Business Manager is not concerned with the high school since a large class is going to be graduating and smaller classes are behind them. The elementary schools, especially the two in Harpswell, have excess capacity. [56]

The West Harpswell Elementary School is less than one mile south of the site of the proposed LNG Terminal, which puts it within close range of any safety issues at the facility. That close proximity has created concern on the part of residents on the Neck. [57] Concern for public safety would suggest a need to relocate this institution well outside the danger zone associated with the facility and its pipeline. The cost of relocation is likely to run into the hundreds of thousands of dollars. Since the companies do not acknowledge a significant safety hazard, they may be unwilling to pay for this move, at which point these expenses will fall to the Town of Harpswell.

Access to the Water

In Harpswell, the 2003 Comprehensive Plan has an entire section devoted to public access to the waterfront. This is an issue of ongoing concern that pre-dates the LNG proposal. While there are 12 public boat ramps in Harpswell, there is little parking at these sites. For example, at the end of Route 123 lies the South Harpswell boat ramp. While the site has a boat ramp, car and boat trailer parking are not permitted. Privately owned Dolphin Marine Service, located nearby, has a paved boat ramp, dock, ample parking and restrooms, but charges a ramp fee. Parking at other town landings and private landings is similarly limited.

The LNG Terminal, if constructed, will decrease public access to the shoreline at the site. The companies have announced plans to purchase shorefront for public use that may offset the anticipated loss of access on the site. However, alternative sites may not have the same deep water access, permitting boat launch at any point in the tide cycle. The companies are not obliged under the lease to improve the site, but will convey it to the Town on an "as is, where is" basis (Section 4.4.1). Moreover, the navigational hazards associated with the LNG Terminal site may shift the demand for access to other areas of town that are well away from the proposed tanker route. These existing access points may be currently ill-equipped to meet added demand. In that case, there will be a need to invest in upgrades to existing access facilities as well as service the new access point provided by the companies.

Transportation Network

A development of this magnitude will increase traffic on State Route 123, part of Harpswell's primary transportation network, linking it to the mainland. Traffic levels in 2001 totalled 12,830 average annual daily trips along the entire stretch of Rte. 123. [58] If the proposed LNG project ends up generating an additional 100 trips per hour or more on that road, there will need to be additional permitting and studies.[59] The condition of State Route 123 is already problematic. The 2003 Draft Comprehensive Plan states, "Of particular concern is the condition of State Routes 123 and 24, the only road links beyond Harpswell's borders. Parts of these require fundamental reconstruction. Cosmetic, periodic repaving and filling potholes by the state are inadequate maintenance of these roads."[60] The Maine Department of Transportation has no plans to upgrade State Route 123 for at least the next six to ten years. [61]

Permanent Cost Increases

Once municipal infrastructure is developed, whether it is built infrastructure such as a new school or fire station, or expanded staffing such as a full-time Board of Selectmen, the costs continue indefinitely. There is no indication, at the present time, of how the Town would spend the lease money if it were received (other than on the lobster and shellfish impact mitigation program). If the windfall from the LNG Terminal were to be spent partly on infrastructure expansion, and partly on lowering the property tax rate, once the LNG Terminal becomes inactive, property tax rates will have to rise at a very rapid rate to support the growth and expansion induced by the LNG Terminal. In essence, this pushes the burden of upkeep from current to future generations.

Wiscasset is a case in point. When the nuclear facility was first built in Wiscasset, it resulted in a windfall for the town in the form of a significant increase in taxable assessed valuation – about $15 million. This led the town to invest in capital projects including a brick transfer station, a school expansion, and other buildings, as well as to increase the size of their town staff by one-third. Once Maine Yankee was decommissioned, the town had to make tough decisions about laying off employees at the same time they faced increasing property tax rates and rising property valuations. The transition has created upheaval in Wiscasset.[62]

The Town of Harpswell 2003 Draft Comprehensive Plan cautions, "The need to fund capital projects such as new community facilities and infrastructure (roads, plant and equipment), must be balanced by the Town's ability to pay for these projects. The Town has much capacity to fund such projects within recommended limits. However, residents also must determine the level of taxation they are willing to accept to do so."

Summary of Likely Impacts on Municipal Costs

The LNG Terminal will influence the cost of providing municipal services in Harpswell in two ways. Until now, the Town of Harpswell has been able to meet its needs at minimal cost and with minimal municipal staff and infrastructure. For example, Harpswell's Town Administrator receives a significantly lower salary (approximately 37% less) than do Town Administrator/Managers in other Maine towns with populations similar to Harpswell's[63]. However, the stresses placed on the community by this minimalist approach are increasingly apparent and noted throughout the Draft 2003 Comprehensive Town Plan. The construction and operation of the proposed LNG Terminal will exacerbate existing conditions and force the town to invest in municipal infrastructure and staffing simply to maintain existing levels of service, let alone meet desired service levels. Second, the presence of the LNG Terminal will require additional municipal (and county and state) expenditures related specifically to Terminal operation, emergency response, safety, and security.

The lease agreement obligates the companies to provide $3,000,000 to the Town for the purpose of replacing the park land lost to the Town through development of the Fuel Depot site. This is a one-time obligation and does not necessarily extend to the cost of land improvements (Section 4.4.1) The lease further obligates the companies to pay the Town $500,000 for erection of a communications tower and removal of the water tower (Section 4.4.2). This is also a one-time obligation that may be carried out over three years. In addition, the lease obligates the companies to pay $50,000 to $100,000 per year to support local non-profit agency activities (Section 4.4.3). None of these obligations will cover ongoing costs of municipal government.

The off-premises improvements section of the lease (13.2) obligates the companies to pay the costs and expenses associated with improvements or operational expenditures in Harpswell which are: a) required by any Permit; b) requested of the Town by the companies; c) identified by the Town as directly required by the existence of the LNG Project and consented to by the companies. In the even of disagreement between the Town and the companies as to what is or is not required by the existence of the LNG Project, a determination will be made through arbitration. The Town will bear one-half the costs of arbitration and the full costs and expenses of its legal counsel and expert witnesses. There is no guarantee that arbitration will be decided in favor of the Town. There is, therefore, no guarantee that any of the municipal (and county and state) expenditures related specifically to Terminal operation, emergency response, safety, and security will be paid by the companies, particularly if they disagree about the underlying risks to the Town and its residents posed by the LNG Project. The companies are under

no obligation to pay municipal costs incurred to address pre-existing conditions that cannot be linked directly or exclusively to the LNG Project.

While it is not possible to determine the exact cost of additional staffing and capital investments at this time, it is possible to identify the areas in which investment will be required and to use estimates to suggest the approximate magnitude of investment required.

The estimated cost of increased staffing requirements to address road conditions through a public works and/or roads department, changing property values through a full-time assessor, improve firefighting capacity to meet existing needs through professionalizing the fire department, handle increased congestion at existing boat launch sites and on the water through upgrading the Harbor Master position to full-time, improve code enforcement by adding a full-time enforcement officer, and improve capacity for town management by hiring a full-time Town Manager is estimated at $563,450 based on data from the 2003 Maine Municipal Association Salary Survey and representative fire departments. Salaries already being paid to the Town Administrator and the Harbor Master, were deducted to arrive at this figure. With thirty percent added for benefits, this figure becomes $732,485.

Capital and maintenance requirements to address pre-existing conditions that will be aggravated by the LNG Terminal include: road improvements and reconstruction on town roads[64] due to increased car and truck traffic, especially during construction of the LNG facility, upgrades to existing waterfront access sites and construction of adequate parking facilities, advanced community wastewater systems and community wells, particularly to protect the Town's fragile water supply and to support existing and future development. A modest estimate of the cost of these investments is $2.5 million combined. In reality, they could be much more costly.

Staff required to address issues specifically related to the LNG Terminal include a finance director to manage a significantly larger budget, an emergency planner to create a local emergency response plan and develop emergency response capability, increased police protection and overtime payments for maintaining security during construction and LNG shipping, overtime payments for firefighters and emergency medical technicians for maintaining security during shipping. We assume monitoring compliance with the lease will be a responsibility of the Town Manager, although given the extensive monitoring requirements contained in the lease, it is unrealistic to expect one individual to provide effective monitoring. The estimated cost of increased staffing to address emergency response, safety, and security needs related to the LNG Terminal is estimated at $1.5 million. In addition to costs incurred by the Town, the County and the State will also incur substantial costs related to emergency planning, safety, and security.

Capital investment and maintenance costs related to the LNG Terminal may include: upkeep of the communications tower, development of a new waterfront access site to replace the loss of the Fuel Depot site, re-locating the Irving F. Chipman Fire Station to a

safe distance from the LNG facility, relocating the West Harpswell Elementary School to a safe distance from the LNG facility, installing radios and other communications equipment as well as emergency kits required by an emergency response plan, and purchasing a new marine patrol vehicle. These costs combined will run into the millions of dollars.

Under the terms of the lease, the Town of Harpswell is solely responsible for any baseline studies or monitoring studies required to conduct and implement the lobster and shellfish impact mitigation program (Section 9.2.3). Compensation for economic loss to lobster fishermen is only partially addressed through the mitigation fund (please see the fisheries section of this report for a more detailed discussion). Economic losses to tourism and recreation businesses, and Harpswell residents who lose time to emergency drills have not been factored into the cost to the Town, nor has the possibility of law suits by owners whose property values are diminished by the presence of the LNG facility. These costs, taken together, may run into millions of dollars.

What is the likely impact of the LNG terminal on property values?

As stated previously, the value of property in Harpswell exceeds the value of buildings and is the town's principal asset. There is a great deal of evidence to suggest that the proposed LNG Terminal, as an industrial disamenity and a potential source of danger, will have a detrimental impact on property values in the Town of Harpswell.

"Municipalities tend to pursue economic development with almost a religious fervor, and often do not think strategically about the overall real estate impacts of their economic development initiatives."[65] An informed decision regarding the proposed LNG Terminal should consider the potential long-term damage to the Towns' tax base, not only the immediate benefits of additional tax revenues.

Impacts of Industrial Development

Industrial development in general, as well as electric power plants, utility lines, and LNG storage facilities, are considered disamenities and have each been found to be associated with a decrease in property values of properties within an approximate two-mile radius.[66] The literature includes documented decreases of over 50%. The factors that create a disamenity include visual effects, noise, light, traffic congestion, and odors.

The proposed LNG Terminal will include two storage tanks that are 130 feet in height and far exceed the height of any other structure in Harpswell. These tanks will be visible from the road and from parts of the shore. Several surrounding islands will have a view of the facility and its tanks, as will those nearby sections of the Harpswell Neck coastline that jut out into Middle Bay. There are 10 properties that directly abut the proposed LNG site, as well as over 100 within a half mile and just under 1,000 within two miles. In addition, tankers of 1,000 feet or more in length (longer than 3 football fields end-to-end) and 150 feet wide, containing up to 200,000 cubic meters each, will be escorted into and out of the harbor as often as every other day, interfering with

commercial, recreational, and tourism-related boating activity. The very scale of the proposed facility will make it difficult to ignore.

Unlike the Fuel Depot, the LNG Terminal will operate on a 24/7 basis emitting noise and light around the clock. The combined impact of ongoing activity, noise, light, and the scale and visibility of structures will prevent the facility from blending into the background.

Interference with Access to the Water

Another disamenity factor that will affect property values is the intermittent lack of access to the water and the navigational hazards posed by LNG tankers. According to the Harpswell Harbormaster[67], there are 2,500 legal moorings along the town's shoreline, in addition to 300-400 unregistered, illegal moorings. There are moorings along most of Harspwell's shoreline. Those below the fuel depot site on the west and southern ends of Harpswell Neck may experience significantly more restriction in the use of their boats and moorings than those above the facility or on the eastern side of Harpswell. The Harbormaster estimates there to be at least 150 moorings along the west side of Harpswell Neck, as well as at least 50 moorings on the islands west of Harpswell Neck and over 80 moorings at the southern end of the Neck. This amounts to at least 280 moorings that may be affected by a restricted number of days on the water. Those remaining 2,220 moorings may still be affected to some extent by the arrival, docking and departure of LNG ships. In addition, there are 140-150 rental moorings that may be affected.

The intermittent lack of access to the water will affect permanent residents but also second home owners, of which there are many in the town of Harpswell. According to the 2000 U.S. Census, 89 percent of the 1,361 vacant housing units in Harpswell (36.8 percent of the 3,701 total housing units) are for seasonal, recreational or occasional use. These statistics point to the fact that Harpswell has a significant number of seasonal residents, who presumably come to Harpswell in the summer season for its proximity and access to the water that surrounds it. Many of these seasonal residents may have moorings, docks or boats that need to be put into the water at public landings.

Risk and Nuisance Effects

> In addition, there are both real and perceived risks associated with an LNG Terminal facility. Risk perception magnifies the impact of a disamenity. Public perceptions of risk and nuisance effects have a measurable economic consequence.[68]

LNG does not explode while in its liquid state, but it is highly flammable in concentrations that occur as it changes from a liquid to a gas. LNG, like other liquid fuels, must vaporize and mix with a proper amount of oxygen to burn. Methane, the principal component of LNG, has a wide flammability range compared to most other gaseous fuels. The low boiling point of LNG (-260šF)

makes it particularly unstable and difficult to maintain in a liquid state. Adding to the danger, LNG storage tanks are not operated above ambient pressure therefore it is possible for air to enter a storage tank and produce an explosive mixture. The explosive potential of LNG is demonstrated clearly by its use as a fuel in internal combustion engines.

Spilled LNG will vaporize quickly, especially when spilled on water. If ignited, the fire will hasten the vaporization and can result in an uncontrollable conflagration. This type of pool fire may occur if LNG is released from a tanker into the water or spilled out of a storage tank. If there were no nearby ignition source, the combustible vapor cloud would move with the wind and could trigger an off-site fire called a plume fire. While methane gas is normally lighter than air, in its just-vaporized state, it is denser than the surrounding air and would follow the ground until it warms. Once ignited, a plume would burn back to the source. LNG burns extremely hot and very fast and a large pool fire or a plume fire would most likely have to burn out.

In recognition of the actual hazards associated with LNG, the U.S. Department of Transportation Office of Pipeline Safety, through The Pipeline Safety Act of 1992, requires thermal radiation exclusion zones and flammable vapor-gas exclusion zones surrounding LNG facilities.[69]Each of these zones is calculated on a facility-by-facility basis using computer models developed for this purpose. No calculations have been made for the proposed Harpswell LNG facility.

The LNG tankers and facilities are subject to the Maritime Transportation Security Act of 2002 developed by the Department of Homeland Security in response to the terrorist attacks of September 11, 2001. It should be noted that the federal government is taking the threat of terrorist attack on LNG tankers and facilities seriously. The LNG Terminal in Everett, Massachusetts was closed for a time following the September 11th attack to assess and improve security procedures. The Coast Guard established temporary safety and security zones for LNG vessel transits and anchorage operations that temporarily closed all waters of Massachusetts Bay within a five hundred yard radius of all LNG vessels anchored in Broad Sound and established a zone one mile ahead, one mile astern, and one thousand yards on each side of any LNG vessel transiting inbound or outbound of Boston Harbor. Today, security is extremely tight. The shipments are never announced in advance, tankers are surrounded by armed patrol boats, the Tobin Bridge is shut down, and police with M-16s patrol waterfront property.[70] Overflights of commercial aircraft at Logan airport are suspended.[71] "The security zone prohibits entry into or movement within this portion of Broad Sound and Boston Harbor and is needed to safeguard the LNG vessels, the public and the surrounding area from sabotage or other subversive acts, accidents, or other events of a similar nature."[72] In July 2002, the Coast Guard imposed a 1,000 yard security zone around the Kenai LNG terminal and subsequently imposed similar zones around other U.S. LNG terminals.[73] Regulations mandate both a safety zone and a security zone for all LNG ships.[74] Thus, the statement

by TransCanada and ConocoPhillips that, "the LNG facility represents an unlikely target of interest to terrorists[75]" is not supported by federal policy.

The proximity of the Brunswick Naval Air Base to the proposed LNG facility in Harpswell may be a concern as well. Naval Air Station Brunswick is the last, active-duty Department of Defense airfield remaining in the northeast, and is home to five active duty and two reserve squadrons. Over 1,600 Naval Reservists travel from throughout New England to drill at Naval Air Reserve Brunswick, SeaBee Battalion and numerous other reserve commands. According to a Deputy Chief in the Cumberland County Sheriff's Department, the naval air base practices often, but does not patrol this area. Planes from the naval air base fly over Harpswell regularly. [76] Farr Field, at the southern end of Harpswell Neck, is a private landing strip. Within 25 miles of this strip are five other airports - private, public and military (Brunswick Naval Air Station). The extent to which operations at these airports would be curtailed due to security measures related to the proposed LNG facility, and the economic costs of curtailment, has not been determined.

An assessment of LNG security risks prepared by the Congressional Research Service for the U.S. Congress states, "LNG tankers and land-based facilities are vulnerable to terrorism. Tankers may be physically attacked in a variety of ways to destroy their cargo or commandeered for use as weapons against coastal targets. Land-based LNG facilities may also be physically attacked with explosives or through other means. Alternatively, computer control systems may be 'cyber-attacked,' or both physical and cyber attack may happen at the same time. Some LNG facilities may also be indirectly disrupted by other types of terror strikes, such as attacks on regional electricity grids or communications networks, which could in turn affect dependent LNG control and safety systems. Since LNG is fuel for power plants, heating, military bases, and other uses, disruption of LNG shipping or storage poses additional 'downstream' risks, especially in more dependent regions like New England."[77]

Risk Associated with Natural Gas Pipelines

Unlike LNG, revaporized natural gas traveling through pipelines travels under pressure and is subject to explosion. The Office of Pipeline Safety collects statistics on pipeline incidents by cause. In calendar year 2002, there were 102 incidents, resulting in a total of 45 injuries, 9 fatalities, and property damages of $23,687,604. Since 1986, there have been 2,371 natural gas pipeline incidents, resulting in a total of 1,349 injuries, 297 fatalities, and property damage of $295,661,806.[78] The most common cause of pipelines incidents is damage by outside forces. For example, on October 23, 1996, in Tiger Pass, Louisiana, the crew of a dredging operation dropped a stern spud into the bottom of the channel to prepare for dredging operations. The spud struck and ruptured a 12-inch-diameter submerged natural gas steel pipeline owned by Tennessee Gas Pipeline Company. The pressurized natural gas released from the pipeline enveloped the stern of the dredge and an accompanying tug, then ignited, destroying the dredge and the tug.[79] The presence of a natural gas pipeline may well affect property values in Harpswell if an

overland route is selected, and in other communities, if a portion of the pipeline is underneath Casco Bay.

Radius of Concern

In the absence of calculated thermal exclusion zones and flammable vapor-gas exclusion zones specific to Harpswell, the best we can do to get a sense of the size of the area in question is to reference studies related to other proposed, operational, and approved LNG Terminals. The environmental impact statement for the Hackberry LNG Terminal, the most recently approved LNG Terminal in the U.S., explains, "If a large quantity of LNG is spilled in the presence of an ignition source, the resulting LNG pool fire could cause high levels of thermal radiation." The exclusion zone calculations for Hackberry range from 321 feet at a minimum to 929 feet from each storage tank depending on the source of the fire. Both these distances are associated with an exposed person experiencing burns within 30 seconds. At a distance of 709 feet, offsite structures used for occupancies or residences would not be expected to burn, though exposed persons would experience burns within 10 seconds. At a distance of 383 feet, clothing and wood can ignite spontaneously.

"A large quantity of LNG spilled without ignition would form a flammable vapor cloud that would travel with the prevailing wind until it either dispersed below the flammable limits or encountered an ignition source."[80] The flammable vapor dispersion zone calculated for Hackberry ranges from 495 feet to 771 feet depending on which of three tanks is being considered. These estimates were considered conservative (too low) by agencies reviewing the Hackberry Environmental Impact Statement because, among other things, they did not account for interaction between the three tanks. The effects of a pool fire on land could easily extend half a mile or more.

Marine-based hazards are different from land-based hazards. Whereas the land-based facilities have features to limit the duration of LNG spills and contain credible spill volumes, any LNG spill on water would be unconfined and would vaporize rapidly due to heat input from the water.[81] A safety study of a proposed power plant and LNG Terminal on Mare Island in Vallejo, California concluded, "A 6,600,000 gallon release of LNG from a 16-foot hole in a LNG carrier into the Bay without ignition could form a cigar-shaped flammable plume that could reach distances between 0.6 mile and 2.5 miles depending on wind speed and terrain. A plume from a release of the contents of a large storage tank through a 16 foot hole could reach distances between 1.6 and 3.2 miles depending on wind speed and terrain. If ignited, a plume will burn back to the spill source, and people within a burning plume will be killed, and houses and vegetation will be ignited.[82]

James Fay, Massachusetts Institute of Technology (MIT) professor emeritus, calculated the pool fire and thermal radiation zones for a maximum LNG spill of 6,000 metric tons or 14,300 cubic meters – approximately 7% of a 200,000 cubic meter tanker's capacity. The pool fire would last 3.3 minutes with a maximum radius of 340 meters (1115.5 feet). A pool fire would burn too hot and too fast to be extinguished and the

potential for retarding the spread of the fire is nonexistent. The thermal radiation damage zone within which people would experience burns and buildings would catch fire is about 1.1 kilometers (0.66 mile or 3,484.8 feet) from the spill site in every direction, covering a land area of about 1.9 square kilometers (1.14 square miles).[83] According to Fay, a ship needs to be about two-thirds of a mile from any spot where people could be exposed to a fire. The damaging heat of a fire will extend nearly a mile from the outer edge of the fire, not simply a mile from its source.[84]

Ronald Koopman of the Lawrence Livermore National Laboratory calculated pool fire effects of a tanker ship collision at the Mare Island plant and determined a distance to third degree burns of 0.35 miles (1,848 feet) , second degree burns 0.5 miles (2,640 feet) and a skin blister threshold of 0.8 miles (4,224 feet), based on a rupture of one 25,000 cubic meter tank – about 13% of a 200,000 cubic meter tanker's capacity.[85] Deliberate acts of terrorism that resulted in igniting a larger percentage of the contents of either a tanker or a storage tank would cause destruction of an even larger area.

These studies suggest a danger zone of approximately 2 – 3 miles in diameter centered on the site of the storage tanks with a danger zone of similar size surrounding LNG tankers as they enter and leave the dock. Significant damage to life and property is likely within this zone should a serious accident and/or a terrorist attack resulting in a spill of LNG on land or water occur. In addition, natural gas released from a faulty pipeline would rise to the surface and vaporize, creating a flammable vapor cloud.

Unique Conditions

Very few communities in the United States have experienced the same combination of high property values based predominantly on shoreline and industrial disamenities accompanied by significant real and perceived dangers to life and property. Therefore, there are no exact parallels in the literature to assist in determining the likely extent of a drop in property values resulting from construction and operation of an LNG Terminal in Harpswell.

We have therefore asked several real estate appraisers and real estate agents familiar with Harpswell to estimate what they consider to be the likely range of impact on the value of surrounding properties. Appraisers estimates range from a reduction in the number of interested buyers but no change in values (based on the fact that values have already been depressed due to the fuel depot), to a 50% drop in values of adjacent properties and a 15% drop in values of properties affected by view only. All expect properties closest to the LNG terminal to be most strongly affected. One appraiser told us that those properties directly adjacent to Maine Yankee had locational adjustments of minus 40-50%. The Wiscasset Town Manager explained that interest in real estate was not as great as it would otherwise have been and that property values in Wiscasset remained depressed for three to four years after Maine Yankee was decommissioned.[86] In the case of Harpswell's LNG Terminal, as in Maine Yankee, the appraiser expects some properties will not be sellable or they will be discounted significantly, especially those adjacent and those on the waterfront on that side of the peninsula. The ability to get a

mortgage will be harder based on appraisals, and refinancing will be tough for those already there.[87]

Research and interviews with local realtors and appraisers suggest that parcels within a two-mile radius of the property and the dock will see decreases in value as a result of the LNG Terminal. Values will decrease more the closer the proximity to the site. We have divided properties and values into four groups based on analysis of Harpswell's tax maps revised in April of 2003: 1) adjacent to the site; 2) within half a mile of the site; 3) within one mile of the site; and 4) within two miles of the site.

Impact on Property Values

We have performed two analyses (See Table 2), one a severe scenario in which values adjacent to the site decline by 50%, those within half a mile by 35%, those within a mile by 25%, and those within two miles by 15%. The second scenario, a moderate scenario, assumes the values of properties adjacent to the site decline by 35%, those within half a mile by 20%, those within a mile by 10%, and those within two miles by 5% (see Figure 2: Property Value Impact Zone, Map 1). This does not include all properties that will be impacted by the passing of LNG tankers through Harpswell's waters. They are also likely to decline in value due to restrictions on access to the water, visual impacts, and safety concerns.

Table 2: Analyses of Impact on Property Values

Property Location	**Number of Properties**	**2003 PropertyValue**	**Discount rate**	**Value Lost**
Adjacent	10	$1,430,272	50%	$715,136
Within ½ mile	139	$16,848,826	35%	$5,897,089
Within 1 mile	147	$32,036,484	25%	$8,009,121
Within 2 miles	910	$135,860,100	15%	$20,379,015
TOTAL	1206	$186,175,682		$35,000,361
Adjacent	10	$1,430,272	35%	$500,595
Within ½ mile	139	$16,848,826	20%	$3,369,765
Within 1 mile	147	$32,036,484	10%	$3,203,648
Within 2 miles	910	$135,860,100	5%	$6,793,005
TOTAL	1206	$186,175,682		$13,867,013

The total number of properties affected by the site is 1,206. The total value lost is likely to range between $13,867,013 and $35,000,361 or 2% to 4% of the value of Harpswell's taxable property in 2003. Again, this does not include property value losses to properties along the route of LNG tankers.

We have defined a two mile radius of concern around the proposed shipping route through Harpswell waters, as shown on the route map provided in the Fairwinds project

description document of November 2003 (p. 38 of 49). There are 193 properties valued at $34,592,400 within this area (see Figure 3: Property Value Impact Zone, Map 2). These properties are in addition to those within the radius of concern established by the site itself. The radius of concern with respect to the shipping route includes the following islands: Barnes, Eagle, Little Mark, Little Birch, Horse, Upper Flag, Haskell, and Great Mark. Assuming a loss of taxable property value of 10% to 20% due to a combination of risk and nuisance factors, the Town can anticipate an additional loss of property value of $3,449,240 to $6,918,480. The total number of parcels impacted is 1,399 or 29% of the 4,775 parcels in Harpswell as of 2002.

The total property value loss associated with the proposed LNG Terminal, including shipping route effects, ranges from $41,918,841 ($35,000,361 + $6,918,480) to $17,316,253 ($13,867,013 + $3,449,240). These impacts would reduce Harpswell's existing taxable property tax base by 5% to 2%. At a property tax rate of $10.00 per $1,000, revenues to the town will decrease by as much as $419,180. This does not include any loss of property value due to construction and operation of a natural gas pipeline. The effects of pipeline construction on property values in Harpswell will depend greatly on whether the pipeline travels under Casco Bay or 100% overland.

The LNG Terminal is proposed within a primarily residential area. The potentially significant impact on property taxes will have not only fiscal, but economic impacts on Harpswell households since, for many families, the value of their home represents their single largest financial asset. If this value is diminished, so is their long-term security and short-term borrowing capacity.

Given the scarcity of land in the Town of Harpswell and its value as the fiscal base of the community over the long-term, a development that has a detrimental effect on property values may not be the community's best choice, especially when there are many possible uses of the site, including commercial, educational, recreational, and light industrial that would not result in adverse property value impacts and could, in fact, contribute to value increases.

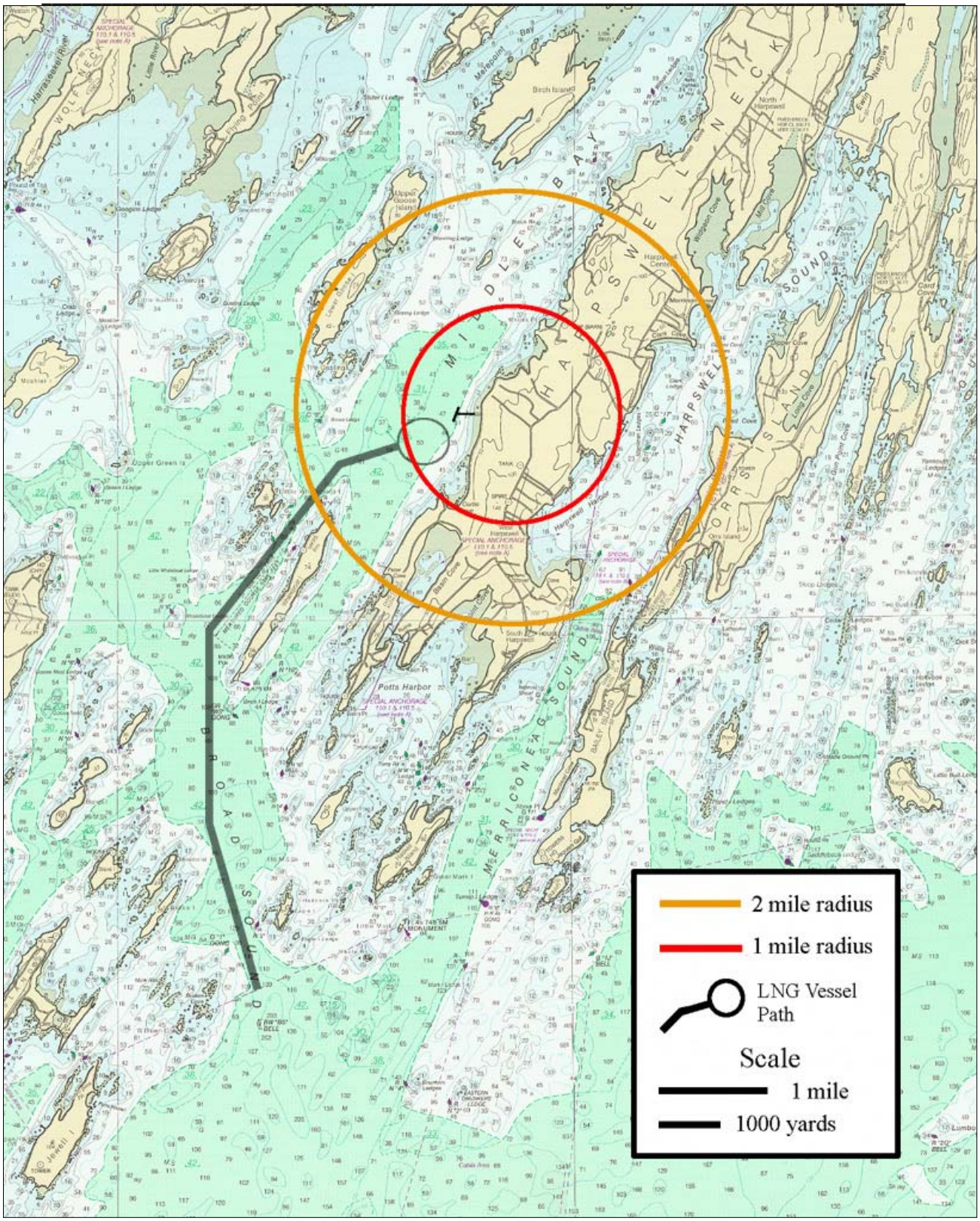

Figure 2: Property Value Impact Zone, Map 1

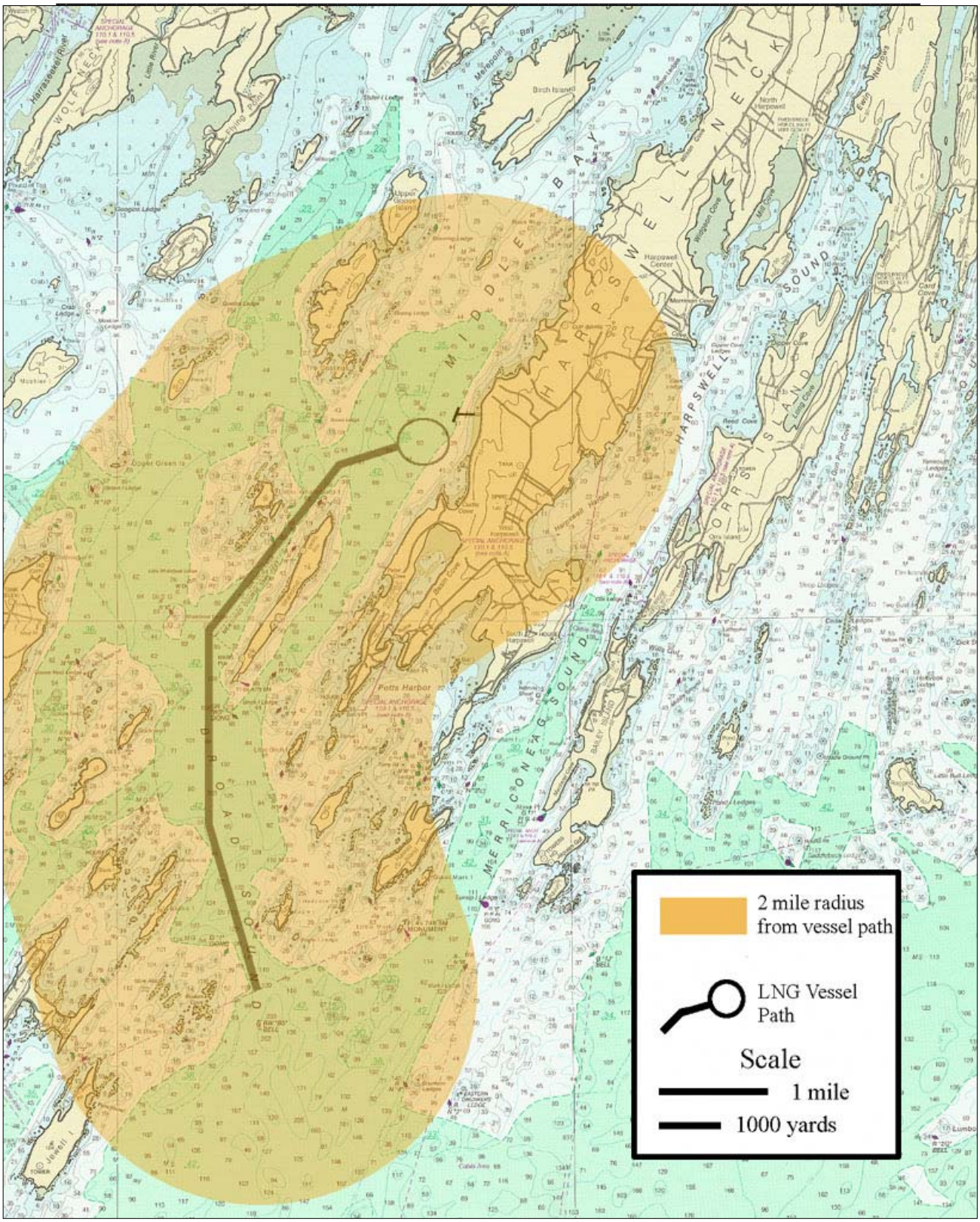

Figure 3: Property Value Impact Zone, Map 2

Fiscal Impact Analysis

A fiscal analysis must include information regarding anticipated increases in municipal costs, any likely gains or losses to the existing taxable property base, and effects on the tax rate of any associated revenues. Two fiscal scenarios are included in this analysis. The first assumes the LNG Terminal is not constructed in Harpswell. Scenario #2 assumes the LNG Terminal is constructed and the TIF is approved. The assumptions for each scenario are listed below.

Scenario #1: No LNG Terminal

1) Harpswell's municipal budget increases at the historic rate of 5% per year.
2) Taxable valuation increases at the historic rate of 1% per year.
3) The analysis indicates the tax rate required to fully fund the municipal budget. In 2002, the tax rate of $9.14 per $1,000 was sufficient to fund roughly 74% of the town's budget. The remaining amounts come from revenue sharing, borrowing, and other revenue sources.
4) The period of analysis is 20 years.

Scenario #2: LNG Terminal with TIF

1) Harpswell's municipal budget increases at a rate of 5% per year through 2007, while the LNG Terminal is under construction, then by 50% in 2008 when operations begin, with growth thereafter at 5% per year. The 45% increase over the historic rate in 2008 represents a combination of capital spending and increased staffing attributable to the presence of the LNG Terminal, which both exacerbates existing conditions in Harpswell, and requires additional spending on emergency planning, safety, and security.
2) Taxable property values decrease as a direct consequence of the LNG Terminal as shown and discussed above. Taxable assessed valuation is assumed to increase at 1% per year through 2004, lose 5% of its value in 2005, and increase at a rate of 0.5% per year thereafter. Property values typically increase at a decreasing rate once a disamenity is present. This analysis does not factor in re-valuation, likely to occur more than once over the period in question.
3) The proportion of the budget raised by property taxes remains at 74%, as it was in 2002.
4) Half of the estimated lease payments received by the Town of Harpswell from TransCanada Pipelines and Conoco Phillips will be used to offset property taxes for all landowners in the community on an equal basis. The basis for anticipated lease payments is taken from Exhibit A of the Town of Harpswell Fairwinds Municipal Development District and Tax Increment Financing District Development Program and includes the lease payment to the General Fund, the Supplemental Lease Payment to the General Fund, and the Taxes to the General Fund from Original Assessed Value.
5) Half of the estimated lease payments received by the Town of Harpswell from TransCanada Pipelines and Conoco Phillips will be used to fund a combination of

additional municipal services, some of which would not otherwise be required, such as emergency planning, new police and firefighter positions, relocation of the elementary school, municipal contribution to protection during shipping operations, etc., the mitigation fund, or placed in reserve. This is treated as off-budget spending.

6) Analysis covers a 20-year period.

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Table 3: Fiscal Condition Without the LNG Terminal

Scenario #1: No LNG Terminal

	2002	2003	2004	2005	2006	2007	2008	2009
Total town budget incl.capital expenditures	$10,282,824	$10,796,965	$11,336,813	$11,903,654	$12,498,837	$13,123,779	$13,779,968	$14,468,966
**Taxable assessed value increase	$828,253,841	$836,536,379	$844,901,743	$853,350,761	$861,884,268	$870,503,111	$879,208,142	$888,000,223
Tax rate required to fund budget at 100%	$12.42	$12.91	$13.42	$14.09	$14.79	$15.53	$16.31	$17.13
Actual tax rate in 2002 is 74% of required	$9.14	$9.55	$9.93	$10.43	$10.95	$11.49	$12.07	$12.67

	2010	2011	2012	2013	2014	2015	2016	2017
Total town budget incl.capital expenditures	$15,192,414	$15,952,035	$16,749,637	$17,587,119	$18,466,475	$19,389,798	$20,359,288	$21,377,253
**Taxable assessed value	$892,440,225	$896,902,426	$901,386,938	$905,893,873	$910,423,342	$914,975,459	$919,550,336	$924,148,088
Tax rate required to fund budget at 100%	$17.98	$18.88	$19.82	$20.82	$21.86	$22.95	$24.10	$25.30
Actual tax rate in 2002 is 74% of required	$13.31	$13.97	$14.67	$15.40	$16.17	$16.98	$17.83	$18.72

	2018	2019	2020	2021	2022	2023	2024	2025
Total town budget incl.capital expenditures	$22,446,115	$23,568,421	$24,746,842	$25,984,184	$27,283,393	$28,647,563	$30,079,941	$31,583,938
**Taxable assessed value	$928,768,828	$933,412,672	$938,079,735	$942,770,134	$947,483,985	$952,221,405	$956,982,512	$961,767,424
Tax rate required to fund budget at 100%	$26.57	$27.89	$29.29	$30.75	$32.29	$33.91	$35.60	$37.38
Actual tax rate in 2002 is 74% of required	$19.66	$20.64	$21.67	$22.76	$23.90	$25.09	$26.35	$27.66

Table 4: Fiscal Condition With the LNG Terminal and the TIF

Scenario #2: LNG Terminal with TIF

	2002	2003	2004	2005	2006	2007	2008	2009
Total town budget incl.capital expenditures	$10,282,824	$10,796,965	$11,336,813	$11,903,654	$12,498,837	$13,123,779	$19,685,668	$20,669,951
50% of anticipated lease payments	$0	$0	$0	$3,002,896	$3,002,896	$3,002,896	$4,437,896	$4,593,121
Taxable assessed value	$828,253,841	$836,536,379	$844,901,743	$802,656,656	$806,669,939	$810,703,289	$814,756,805	$818,830,589
Tax rate required to fund budget at 100%	$12.42	$12.91	$13.42	$11.09	$11.77	$12.48	$18.71	$19.63
Actual tax rate in 2002 is 74% of required	$9.14	$9.55	$9.93	$8.21	$8.71	$9.24	$13.85	$14.53
100% of anticipated lease payment	$0	$0	$0	$6,005,791	$6,005,791	$6,005,791	$8,875,791	$9,186,241

	2010	2011	2012	2013	2014	2015	2016	2017
Total town budget incl.capital expenditures	$21,703,449	$22,788,621	$23,928,053	$25,124,455	$26,380,678	$27,699,712	$29,084,697	$30,538,932
50% of anticipated lease payments	$4,753,779	$4,920,060	$5,092,160	$5,270,285	$5,454,643	$5,645,454	$5,842,944	$6,047,346
Taxable assessed value	$822,924,742	$827,039,366	$831,174,563	$835,330,436	$839,507,088	$843,704,623	$847,923,147	$852,162,762
Tax rate required to fund budget at 100%	$20.60	$21.61	$22.66	$23.77	$25.15	$26.14	$27.41	$28.74
Actual tax rate in 2002 is 74% of required	$15.24	$15.99	$16.77	$17.59	$18.61	$19.34	$20.28	$21.27
100% anticipated lease payment	$9,507,557	$9,840,119	$10,184,320	$10,540,569	$10,909,286	$11,290,908	$11,685,887	$12,094,691

	2018	2019	2020	2021	2022	2023	2024	2025
Total town budget incl.capital expenditures	$32,065,879	$33,669,173	$35,352,631	$37,120,263	$38,976,276	$40,925,090	$42,971,344	$45,119,912
50% of anticipated lease payments	$6,258,901	$6,477,861	$6,704,485	$6,939,041	$7,181,806	$7,433,068	$7,693,124	$7,962,282
Taxable assessed value	$856,423,576	$860,705,694	$865,009,222	$869,334,269	$873,680,940	$878,049,345	$882,439,591	$886,851,789
Tax rate required to fund budget at 100%	$30.13	$31.59	$33.12	$34.72	$36.39	$38.14	$39.98	$41.90
Actual tax rate in 2002 is 74% of required	$22.30	$23.38	$24.51	$25.69	$26.93	$28.23	$29.58	$31.00
100% anticipated lease payment	$12,517,802	$12,955,722	$13,408,970	$13,878,081	$14,363,612	$14,866,135	$15,386,247	$15,924,563

The results of the fiscal analysis show a reduction in tax rates with the LNG Terminal and the TIF as compared with no LNG Terminal in the years 2005, 2006, and 2007. For example, tax rates without the Terminal are estimated at $11.49 per thousand in 2007 and $9.24 with the Terminal and the TIF. However, as soon as the added municipal costs incurred to address deteriorating pre-existing conditions combined with expenditures required to accommodate the LNG Terminal as detailed above are factored into the municipal budget during 2008, *the tax rates required to support the LNG Terminal with the TIF exceed the rates required without the Terminal*. For every year from 2008 to 2025, tax rates required with the Terminal and the TIF exceed those required without the Terminal. Rates continue to go up every year. For example, in 2010, the tax rate required to support the municipal budget without the Terminal is $13.31 and with the Terminal and the TIF the tax rate is $15.24. By 2015, the rate without the Terminal is $16.98 and with the Terminal and TIF it is $18.61. In other words, even if half the proceeds of the lease payment are applied directly to tax abatement, it is not sufficient to prevent rising tax rates as a result of increased service needs associated with the LNG Terminal on top of ordinary growth.

With the LNG Terminal and no TIF, the effect on tax rates is even more pronounced. Starting in 2008, the tax rate required to support the budget with the Terminal but no TIF is $14.17. In 2010, it is $15.57, and by 2015, it is $19.66. All these rates assume that 26% of Harpswell's spending continues to be paid for by sources other than property tax revenues.

The difference in the value of Harpswell's taxable assessed property with and without the LNG Terminal in the year 2015 is $843,704,623 versus $914,975,459, a positive difference of $71,708,836. By the year 2025, the difference is $886,851,789 versus $961,767,424, a difference of $74,915,635. This represents the loss of property value to the Town of Harpswell associated, over time, with bringing in a large disamenity.

ECONOMIC ANALYSIS

What might the anticipated economic impacts of the proposed LNG plant be for Harpswell?

Employment Impacts

The Fairwinds Project Description of November 2003 states, "by hiring workers from Harpswell and the region, Fairwinds will improve the employment rate in the area." According to the 2000 Census of Population, Harpswell had a labor force of 2,582 individuals over the age of 16, of whom 2, 491 were employed, for an unemployment rate of 4%. Four percent is widely considered a relatively low rate of unemployment. Nor is the number of jobs in Harpswell static. According to the Maine Department of Labor, 61 net jobs were added in Harpswell between 1990 and 1997, an increase of over 16%. The town hosted a total of 424 jobs in 1997. In fact, in contrast to improving the employment

rate, the presence of the LNG Terminal is likely to adversely impact employment in fisheries and tourism, two areas the town has expressed interest in maintaining and building upon.

For the first eight months of 2003, the unemployment rate in the Bath-Brunswick Brunswick Labor Market Area, of which Harpswell is a part, ranged from a high of 4.5% in January to a low of 3.1% in May, July, and August.[88] The total number of unemployed people in the entire market area ranged from 1,540 to 1,080. As defined by the Bureau of Labor Statistics, U.S. Department of Labor, a labor market area consists of an economically integrated geographical area within which workers can reside and find employment within a reasonable distance or can readily change employment without changing their place of residence. Therefore this is the most relevant region to consider. Unemployment rates for 2003 are even lower in Cumberland County and the Portland Metropolitan Statistical Area.[89]

Given the low rates of unemployment during a difficult economic period for the United States as a whole, and the small number of unemployed persons, it is unlikely that the LNG Terminal will contribute to a reduction in unemployment and far more likely that it will need to recruit from outside the labor market area to fill the majority of the 900 jobs anticipated during construction as well as some of the 50 anticipated permanent jobs.

Recruitment from outside the area will put pressure on transportation networks including State Highway 123, already cited by the Town as in unacceptable condition. The State of Maine Department of Transportation does not plan to rehabilitate Highway 123 for at least the next six to ten years.[90] Route 123 will continue to deteriorate at an increasing rate due to increased traffic associated with LNG Terminal construction. This will have an adverse effect on many of the commuters who live in Harpswell but work elsewhere.

The LNG Terminal will make Harpswell a regional magnet for job growth during the multi-year construction phase, putting pressure on municipal infrastructure in relation to public health and safety, waste disposal, and the Town's fragile groundwater resource. It is unrealistic to think that TransCanada and ConocoPhillips will pay the full additional cost of serving an increased population since the growth trends preceded their arrival.

Job recruitment from outside the area may also result in population growth within the labor market area. With growth in population come increased demands on municipal services, leading to increased costs of local government. Harpswell's population has increased 157.8% since 1960 for an average rate of growth of nearly 4% and 5% between 1990 and 2000. Harpswell's municipal budget increased from $7,426,850 in 1997[91] to $10,044,439 in 2002.[92] This is an increase of 35% over 7 years or an average of 5% per year.

Access to the Water

Access to the water is becoming a serious issue along the entire southern Maine coast, including Harpwell. Recreational use of coastal waters is growing.[93] According to the Marine Recreational Fisheries Statistics Survey, conducted by the Maine Department of Marine Resources and the National Marine Fisheries Service, the number of saltwater anglers in Maine has risen substantially over the past five years. In 1995, there were 249,201 saltwater anglers in Maine, of which 114,060 were Maine residents. By 1999, the number increased by 45% to 361,778, of which 237,000 were Maine residents. Paddling has also grown in popularity. Boat registrations have spiked over the past four years. From 1996 through 1999, there have been consistently over 126,000 registered boats, with a peak in 1997 of 133,529. Many businesses in Harpswell depend on tourism and recreation. According to the 2003 Draft Town Plan, competing demands already exist for recreational and commercial use of accesses.

What impact is the proposed LNG terminal likely to have on the commercial fishing economy of Harpswell?

As of 1998, approximately 400-500 people are engaged in part or full-time employment in commercial fishing based in Harpswell. Approximately 200-250 fishermen comprise the core of this group; these fishermen are primarily dependent on fishing as their main income source. In addition, there are probably 60-80 full or part-time jobs in related industries, bringing the total to 460-580 full or part-time jobs in fishing-related jobs in Harpswell, or approximately 50-60% of the workforce.[94]

Based on landings in 1997 and 1998, there was approximately $9-$10 million in landed value within Harpswell, and $12 - $14 million attributed to Harpswell-based commercial fishing. At least half of the income earned by fisherman is spent in other sectors of the Harpswell economy, such as wholesale, retail, services, and construction sales and related equipment. [95]

Lobster Industry

The lobster industry is by far the most important fishery in Harpswell and is responsible for 64% of the total landed value of all catch in Harpswell, or between $7.4 and $8.9 million.[96]

Marine Traffic Associated with the Proposed LNG Facility

The direct impact of the marine traffic associated with the LNG facility during construction and operation is one of the greatest areas of concern for the fishing industry in Harpswell.[97] The associated impacts are two-fold. First, the increased traffic associated with the construction of the facility and the safety zones established for approaching LNG vessels will likely cause a greater degree of congestion in Middle Bay and Broad Sound and will also limit access to fishing grounds. Second, the larger vessels associated with the facility (ferries, construction barges, and the LNG vessels) can

damage and/or destroy fixed gear in its path. Both of these impacts are discussed in detail below.

Safety and Security Zones Applied to an Approaching LNG Vessel

Each LNG vessel will be accompanied by at least one Coast Guard vessel and two tug boats. Due to the flammable nature of liquefied natural gas and the potential impact of a resulting fire or explosion, safety and security zones are enforced to safeguard the LNG vessels from sabotage and other terrorist activities. Federal regulations require a moving safety zone around any LNG vessel.[98] TransCanada Pipelines and ConocoPhillips claim that the regulations pertaining to the safety zone would likely reflect those in Cove Point, Maryland, where a 500-yard safety zone (nearly 1/3 of a mile) is applied while the LNG vessel is in transit. Although these regulations may be considered the most "likely" to be applied in the case of Harpswell, there is no guarantee that the safety zone would not be greater in size. For the Everett, Massachusetts LNG facility, regulations require that all vessels must remain clear of the main ship channel two miles ahead and one mile astern of the LNG tankers during transit (see Map 3 on Page 36).[99] The size of the safety zone is a major determinant in how significant the impact will be on the fishing industry; however, the exact dimensions will most likely not be known until the project is in the permitting phase. The two major impacts from the safety and security zones will be increased congestion and temporary loss of access to fishing grounds.

Loss of Fishing Grounds

Based on a 500-yard safety zone, TransCanada Pipelines and ConocoPhillips maintain that access to fishing areas would be restricted for no more than 30 minutes as the LNG carrier navigates through Broad Sound. If the safety zone is larger than 500 yards, then there would be a proportionately greater delay for fisherman. If an LNG vessel is approaching during prime fishing hours, there may be an even greater impact on fishermen, who maximize their effort during daylight hours.[100] TransCanada Pipelines and ConocoPhillips have stated that they will work with local fisherman to minimize impact by arriving during off-peak hours, but security concerns may override any established policy.

In the event of a heightened threat of terrorism, new security measures could be enacted that would increase the impact to the fishing industry and the greater community. These security measures could include expanded security zones and the closing of airports and bridges.

In addition to the temporary loss of access to fishing grounds as an LNG vessel passes through Broad Sound and Middle Bay, there will also be a loss of access to waters at the project site itself. When an LNG vessel is berthed at the project site, there will be an imposed security zone as well, which would prevent access to fishermen who traditionally use these waters, unless specific exceptions are made.

Congestion and Navigation

The number of registered moorings continues to rise in Harpswell waters, from 2,212 in 2001 to 2,297 in 2002, an increase of 4%.[101] In Middle Bay, estimates of the total number of moorings include: 150 moorings along Harpswell Neck, 100 at Paul's Marina (Merepoint Neck), 50 near Lower Goose Island, and 80 at Dolphin Marina.[102] Currently, there is already a significant degree of crowding in the harbors and there has been a significant increase in non-commercial boat traffic, especially recreational boats, in upper Middle Bay.[103] For more information, see the section of this report entitled "Recreational Boating."

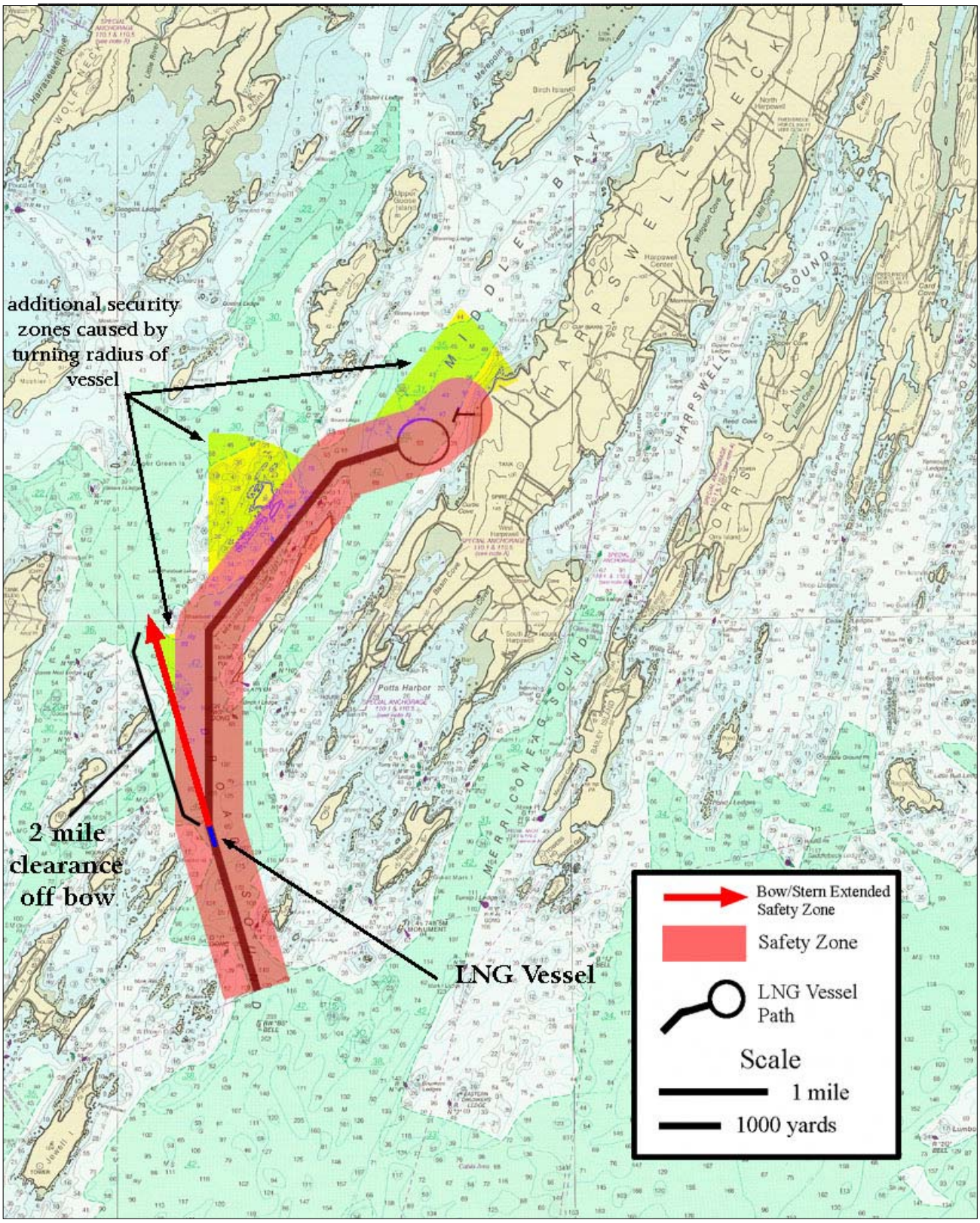


Figure 4: Map of Security Zones Associated with a LNG Vessel in Transit

LNG-related traffic during the construction phase of the project, such as ferries and barges, will contribute to existing levels of congestion in these waters. Once the facility is in operation, fishing boats will have to navigate around the established security zones for the LNG vessels while they are in transit and when berthed at the project site. Navigating around these zones in an already crowded bay will cause delays to some fisherman in route to their destinations. Depending on their location and destination in relation to the security zones, certain fisherman will be more affected than others.

Proposed LNG Vessel Route

On its approach to the project site, the LNG vessel will most likely pass through Broad Sound and between Little Whaleboat and Whaleboat Islands.[104] As it does so, there will likely be marine safety broadcasts made at regular intervals to inform mariners of the vessel's location. As a result, some boats may be forced to chart a new course to their destination or, in some cases, wait for the LNG vessel to pass before continuing on.

In particular, the approach of an LNG vessel as it passes the Broad Sound Bell Buoy and enters Broad Sound near Eagle Island could cause delays for vessels that are intending to enter or exit the sound. The width of the navigation channel (between navigational buoys) at this location is less than the safety zone proposed by TransCanada Pipelines and ConocoPhillips. Because this area is the main access to Middle Bay, there could be numerous vessels that will be impacted. Potential destinations within Middle Bay include access to fishing grounds, moorings, and other fishing-related destinations along Harpswell Neck.[105]

Because of its proximity to the proposed route, boats coming in and out of Potts Harbor can be affected by LNG traffic. Destinations in or near Potts Harbor include Dolphin Marina (80 moorings), Interstate Lobster, Bibber Lobster, Dolphin Marine Services, the Town Dock, the Charles Johnson Lobster Warf, and the Town Boat Landing.

<u>Gear Loss associated with LNG Marine Traffic</u>

With any large vessel navigating the waters of Middle Bay, there is a chance that it will damage or destroy fixed gear. Fixed gear is fishing gear that is placed in the water and occupies a fixed location, such as crab and lobster traps. Because of the importance of the lobster industry, there has been local concern and opposition to the LNG project based on the impact of lost gear on local fisherman.[106]

Impacts from Direct Contact with Vessels

Lobster traps, typically made out of mesh wire, are lowered to rest on the bottom of the seafloor. Lobstermen typically put down approximately eight traps on a single line, or "string," that is identifiable on the surface by buoys on either end. Depending on the type and size of the LNG-related vessel, there may be a range of direct impacts to the traps. Smaller vessels can navigate around these buoys without much difficulty. Larger vessels occupy more surface area on the water and have less maneuverability and therefore come in contact with these buoys more often.

If a vessel comes into contact with a buoy, a number of things can happen. First, the vessel can simply pass over the buoy and not cause it or the underlying trap any harm. Second, if the buoy line snags on the vessel as it passes, it can either sever the line or tow the line behind. If the vessel tows the line and pulls the string of traps with it, the traps can rake across the bottom and potentially tangle with other obstructions including other traps. In this scenario, there is a likelihood that a string of traps may continue to pick up other traps as it moves across the seafloor, creating a single mass that can be difficult to remove.

More probable, however, is that the passing vessel will sever the line attached the buoy. If both buoys at either end of the string are lost in this way, the visual markers are lost and it becomes very difficult to retrieve the traps. In shallow waters, lobstermen can use grapple hooks in the area of lost traps to try and recover them; however, in deeper waters, such as those found in navigation channels, trap retrieval becomes much more difficult.

As mentioned above, the size and type of the vessel is a key factor in determining how the traps are impacted. There are four main types of vessels associated with the LNG facility that have potentially different impacts on lobster traps.

- Coast Guard Vessels – As a result of the project, there will be more Coast Guard vessels operating in Middle Bay and Broad Sound. These vessels will mainly be escorting the LNG vessels as they approach the site. Because of their design, the impact of these vessels is considered to be minimal.
- Tug Boats – In addition to Coast Guard vessels, there will be tugs that escort the LNG vessel (forward and aft) as it approaches its destination. Tugs will also be used to help transport barges and other craft from Portland during the construction phase. Although there is some concern that the tugs will damage traps themselves, the largest concern regarding tugs is when they use tow lines to transport craft. These tow lines are typically used on or near the water's surface where they can tangle and sever buoy lines.
- Ferries – Ferries will be used to transport people and supplies to the project site. TransCanada Pipelines and ConocoPhillips have indicated that approximately 900 people will be employed during the construction phase; many of these are likely to arrive via ferry from Portland. There is concern that ferries, because of their size, will cause damage to traps or cut buoy lines.
- LNG Vessels – There is the greatest degree of concern about the impact of the LNG vessels on lobster traps, because of their sheer size (See Figure 6). Many fishermen expect that these vessels will damage or destroy a significant number of traps in their path.

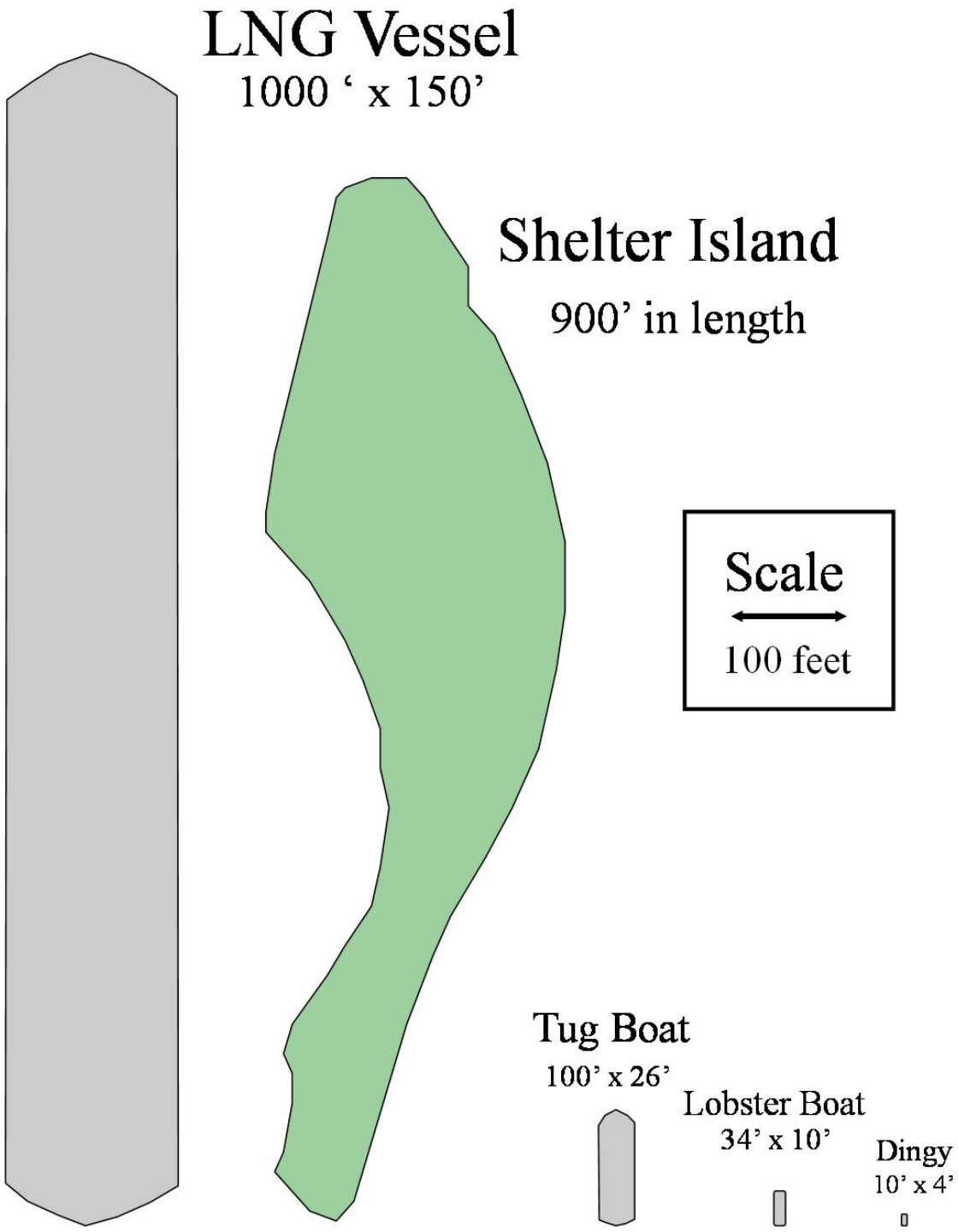


Figure 5: Relative Size of a LNG Vessel

Economic Impacts to Lobsterman

In order to get a better understanding as to what extent local fisherman will be impacted, Yellow Wood Associates distributed a list of questions (Appendix B) to local fisherman. The purpose of these questions was to put together estimates on the projected costs from lost gear and other direct impacts associated LNG-related traffic. Answers to the questions were then verified by phone calls to other lobstermen. Although it is difficult to determine actual impacts with a high level of accuracy given the number of variables, the analysis below provides a useful starting point for quantifying the costs to lobstermen.

Downtime Associated with Lost Traps

If a trap is lost due to LNG-related traffic, there are two major costs to the lobsterman. First, there is the cost of the trap itself, which ranges from $40 - $65 dollars (average of $53), depending on its size. In addition, there is the cost of the downtime associated with having lost the trap. The downtime is dollar value associated with not having the trap in the water, and it can be calculated by dividing the total income of all traps for a given time period by the number of traps hauled during that time.

Traps are not easy to come by; based on estimates by local fisherman, the wait for a new trap can be approximately 53 days between June and December and 37 days between December and June. Based on lobstermen's responses, a lobster trap in the navigation channel, on average, brings in $1.50 per day.

Using this figure, the total cost of downtime associated with losing one trap can range from $56 to $80, depending on the season. Adding the cost of a new trap, the total cost for the entire wait period is approximately $133 between June and December and $109 between December and June.

Introduction to the Analysis

Using the data provided from the fisherman, YWA set up a systematic analysis to estimate the total economic impact from trap losses (and associated downtime) due to LNG-related traffic. The analysis is divided into two areas of impact: below and above Broad Sound bell (See Appendix A for data tables). It should be noted that this analysis should be considered a worst-case scenario. Furthermore, the analysis is based on a number of assumptions, which are described below:

(1) ***Lobstermen do not keep an excess inventory of traps to replace lost or damaged traps.*** Lobster traps represent a significant investment for lobstermen, costing, on average, $53/trap. In addition, all lobstermen must have tags for their traps and for those who fish the trap limit (800 traps), they receive only 80 extra tags a year. Therefore, if a lobstermen runs out of tags, he must reapply to the State and will only receive new tags after the application is reviewed, which can take up to one month. In addition, most lobstermen have a specific type of trap that they fish and will not be satisfied with generic traps. All of these factors act as barriers to stockpiling additional supplies of traps.

(2) ***Lobstermen will continue to fish the channel even though there will be a greater danger of lost traps.*** This assumption is based on a number of premises. First, the navigation channel is one of the most productive fishing grounds for lobsters. Consequently, many lobstermen will take their chances and leave their traps in the channel during the arrival and departure of LNG vessels (this behavior will likely be reinforced if lobstermen are compensated for lost gear). Second, some lobstermen have equipment and gear suited to deep channel fishing (i.e. large boats with deeper drafts) and cannot easily move to shallower waters. Third, there are few productive fishing grounds that are not currently being fished, which limits the ability of a lobsterman to "go and fish somewhere else." Furthermore, the lobster fishing industry is generally territorial in nature and, as a result, there are certain unofficial rules that govern setting traps. In general, lobstermen do not look favorably on other lobstermen moving into their region, in which they have may have been fishing for many years. All of these factors can act as a barrier to moving traps out of the navigation channel and into other areas. A second alternative analysis, following the one below, will consider the effect of removal of 50% of the potentially impacted traps from the navigation channel.

(3) ***Impacts are realized on an individual per trap basis.*** As discussed earlier in this report, LNG-related traffic can impact fishing gear in a number of ways. The analysis below is set up so that damage is calculated on an individual trap basis.

Alternative scenarios and other considerations will be addressed following this section.

Zone of Impact: Proposed LNG Navigation Channel *above* Broad Sound Buoy

From June to December, there may be as many 78 lobstermen that would be directly impacted by an LNG vessel's path into Middle Bay above the Broad Sound Bell Buoy. From December to June, there are approximately 16 lobstermen that will be affected. Each lobsterman sets a different number of traps, so the total number of traps in this area can vary significantly. Based on responses to the survey, a figure of 350 traps hauled per day (June-December) and 250 traps per day (December-June) was used for this analysis, yielding a trap pool of 27,300 (June-December) and 4,000 traps (December-June) for all lobstermen above Broad Sound Bell Buoy. If only 10% of the trap pool for each season will be set in an area of water that may be potentially impacted by LNG-related vessels, the trap pool is reduced to 2,730 and 400 traps, respectively. Furthermore, if a LNG-related vessel will only destroy a trap in its path 10% of the time (including both arrival and departure), the total number of impacted traps during the first vessel transit is approximately 273 traps from June-December and 40 traps from December-June.

From earlier calculations, we know that there will be potentially 88 vessel transits a year based on minimum projections for total volume of throughput for the facility (.5

billion cubic feet/day) and a maximum of 282 vessel transits a year based on a throughput of 1 billion cubic feet/day. The following two scenarios will calculate the minimum and maximum projected economic impact associated with the total number of vessel transits per year.

Scenario: Minimum Number of Vessel Transits **(Table A1 & A2)**

For the minimum vessel trip scenario, a LNG vessel will arrive or depart approximately every 4.15 days (365 days / 88 trips). During the initial trip, 273 traps (June-Dec) and 40 traps (Dec-June) will be removed from the total number of traps in the trap pools, leaving 27,027 traps (June-Dec) and 3,960 traps (Dec-June). Because there is a 53 day wait period for new traps from June-December and a 37 day wait period from December-June, each successive vessel transit will further reduce the pool of traps until after the wait period has expired. For example, the total number of impacted traps during the second trip is reduced from 273 to 270 (Jun-Dec)[107]. The trap pool continues to decrease until new traps arrive and are added to the trap pool. Using this analysis, we have calculated the number of impacted traps and the cost of downtime associated with each vessel transit, which is shown in Tables A1 & A2. The cost of downtime was calculated by multiplying the average income per trap per day ($1.50) by the number of traps impacted per trip multiplied by the number of days between each trip (4.15 days) up to the day on which the trap is replaced. The total impact for each season is summarized in the following table:

Table 5: Economic Impacts to Lobstermen Above the Broad Sound Bell Buoy (minimum)

season	total traps impacted	total cost of traps (@ $53/trap)	total cost of downtime	total cost (traps + downtime)
6/16 - 12/15	10,895	$577,422	$763,305	$1,340,727
12/16 - 6/15	1,642	$87,025	$83,692	$170,716

Year Total: $1,511,444

Scenario: Maximum Number of Vessel Transits (Table A3 & A4)

For the maximum vessel trip scenario, a LNG vessel will arrive or depart approximately every 1.29 days (365 days / 282 trips). Following the same analysis as above, total impact for the season is as follows:

Table 6: Economic Impacts to Lobstermen Above the Broad Sound Bell Buoy (maximum)

season	total traps impacted	total cost of traps (@ $53/trap)	total cost of downtime	total cost (traps + downtime)
6/16 - 12/15	28,637	$1,517,768	$1,962,523	$3,480,291
6/16 - 12/15	4,505	$238,785	$228,269	$467,053

Season Total: $3,947,345

Zone of Impact – Proposed LNG Navigation Channel *below* Broad Sound Buoy

From June to December, there may be as many 68 lobstermen that would be directly impacted by an LNG vessel's path into Middle Bay below the Broad Sound Bell Buoy. From December to June, there are approximately 35 lobstermen that will be affected. Using the number of traps hauled per day for each season, this yields a trap pool of 23,800 (Jun-Dec) and 8,750 traps (Jun-Dec) for all lobstermen below Broad Sound Bell Buoy. If only 10% of the trap pool for each season will be set in an area of water that may be potentially impacted by LNG-related vessels, the trap pool is reduced to 2,380 and 875 traps, respectively. Furthermore, if a LNG-related vessel will only destroy a trap in its path 10% of the time, the total number of impacted traps during the first vessel transit is approximately 238 traps from June-December and 88 traps from December-June.

***Scenario: Minimum Number of Vessel Transits* (Table A5 & A6)**

For the minimum vessel trip scenario, a LNG vessel will arrive or depart approximately every 4.15 days (365 days / 88 trips). During the initial trip, 238 traps (June-Dec) and 88 traps (Dec-June) will be removed from the trap pools, leaving 23,562 traps (June-Dec) and 8,663 traps (Dec-June). During the second vessel transit, the total number of impacted traps is reduced from 238 to 236 (Jun-Dec) and from 88 to 87 (Dec-June). The trap pool continues to decrease until new traps arrive and are added to the trap pool. Using this analysis, we have calculated the number of impacted traps and the cost of downtime associated with each vessel transit, which is shown in Tables A5 & A6. The total impact for the each season is summarized in the following table:

Table 7: Economic Impacts to Lobstermen Below the Broad Sound Bell Buoy (minimum)

season	total traps impacted	total cost of traps (@ $53/trap)	total cost of downtime	total cost (traps + downtime)
6/16 - 12/15	9,498	$503,394	$665,446	$1,168,839
12/16 - 6/15	3,592	$190,367	$183,076	$373,442

Year Total: $1,542,281

Scenario: Maximum Number of Vessel Transits (Table A7 & A8)

For the maximum vessel trip scenario, a LNG vessel will arrive approximately every 1.29 days (365 days / 282 trips). Following the same analysis as above, total impact for the season is as follows:

Table 8: Economic Impacts to Lobstermen Below the Broad Sound Bell Buoy (maximum)

season	total traps impacted	total cost of traps (@ $53/trap)	total cost of downtime	total cost (traps + downtime)
6/16 - 12/15	24,966	$1,323,182	$1,710,918	$3,034,100
6/16 - 12/15	9,855	$522,341	$499,338	$1,021,679

Year Total: $4,055,779

The total impact of the LNG traffic on lobster fishermen in the navigation channel above and below the Broad Sound Bell Buoy is estimated at $3,053,725 for an annual throughput of .5 billion cubic feet of gas and $8,003,124 for an annual throughput of 1 billion cubic feet. As discussed elsewhere in this report, the likely throughput for the facility is at least 1 billion cubic feet.

Additional Concerns

Loss of a "String" of Traps
Because traps are fished on "strings", there are additional costs associated with the buoys and rope, which have not been included in the above analysis. Assuming that some of the lost traps are lost due to a lost string (buoys are clipped from either end), the additional replacement costs for the buoys and rope are $8 and $55 per string, respectively. Based on the total number of traps impacted in the above scenarios, the maximum number of string losses (and associated costs) for one year are listed below (scenario 1).

Table 9: Additional Costs associated with Losing a "String" of Traps

Area	vessel trip scenario	# of traps impacted/year	strings impacted (# traps/8)	cost of buoys	cost of rope	total cost
Above B.S. Bell	*minimum*	12,537	1,567	$12,537	$86,192	$98,729
	maximum	33,142	4,143	$33,142	$227,851	$260,993
Below B.S. Bell	*minimum*	13,090	1,636	$13,090	$89,994	$103,084
	maximum	34,821	4,353	$34,821	$239,394	$274,215

During periods of inclement weather, many lobstermen are prevented from hauling their traps. As a result, strings of traps may be exposed to a number of vessel trips, which greatly increases the probability that both buoys will be severed, which will cause the loss of the entire string.

Alternative Scenario: Displacement of Traps from the Navigation Channel
If some of the lobstermen who are currently fishing the navigation channel chose to move their traps elsewhere, they will lose 50% of their income from those traps because the navigation channel is far more productive than surrounding waters. Assuming that 50% of the potentially impacted traps (column 6 in the tables, above and below the Broad Sound Bell buoy), are moved outside of the navigation channel after the first vessel arrives, the total number of traps moved equals 3,099 traps above the Broad Sound Bell buoy and 3,222 traps below (for all lobstermen). Given that these moved traps will produce 50% less income than if they were left in the navigation channel, they would earn approximately $2,370 less per day, or a total of $865,050 for an entire year.

Lobster-Shellfish Mitigation Program

TransCanada Pipelines and ConocoPhillips have stated that they will work with the Town to develop a lobster and shellfish mitigation program to redress some of the costs associated with the LNG project. On January 22, 2004, the town of Harpswell released the final draft of the Lease Agreement between the companies and the town. Article IX deals specifically with the Lobster and Shellfish Impact Mitigation program and details the financial arrangements between the town, the claimants, and TransCanada Pipelines and ConocoPhillips.

Eligible Claims

Section 9.2.1 defines eligible claims as:

> all claims, costs, damages, liabilities and expenses proven to be satisfaction of Landlord as having been incurred for (a) damage to traps, gear and equipment resulting from shipping activities in Harpswell Waters associated with the construction and normal operation of the LNG Project (but excluding LNG Pipeline construction and use); and (b) losses of income of shellfish harvesters holding licenses issued by the Town of Harpswell, Maine and licensed lobster fisherman, arising as a result of restrictions on lobster fishing and shellfish harvesting activities in Harpswell Waters or as a result of shipping, construction, or normal operations associated with the LNG Project (but excluding LNG Pipeline construction and use).

Geographic Area of Coverage

According to the Lease Agreement, "Harpswell waters" are defined as "all waters in Broad Sound from the Broad Sound bell buoy north to the northernmost reach of the LNG Project, taking into account the shipping channel and turning basin." As a result, Lobstermen that fish the navigation channel below Broad Sound bell buoy are not covered by the program and may incur significant losses of traps and associated income in this region that will remain uncompensated. According to the analysis above, the economic impact in these waters accounts for $1,542,281 for the minimum vessel trip scenario and $4,055,779 for the maximum. This is 51% of the value the entire cost attributed to the area above and below the Broad Sound Bell buoy for each scenario.

Damage to Equipment

It is clear from (a) above, that the mitigation program will cover costs incurred to shellfish harvesters or lobstermen due to the loss or damage of equipment, such as traps, during construction and normal operation of the facility. However, impacts to fisherman from the construction or use of the pipeline are not covered (these impacts are discussed later in this report). The total damage to traps for one year range from $664,447-$1,756,553 above Broad Sound Bell Buoy and $693,761-$1,845,523 Broad Sound Bell Buoy.

Other Losses

Clause (b) states that the program will cover losses of income associated with both (1) restrictions on both lobster fishing and shellfish harvesting and (2) shipping, construction, and normal operations of the project (again excluding the LNG pipeline construction and use). However, it is unclear from this statement whether downtime associated with a lost

trap is covered. The cost of downtime ranges from $846,977-$2,190,792 above Broad Sound Bell buoy and $848,076-$2,210,256 below.

Excluded Claims

According to lease agreement, the mitigation program does not cover losses of traps caused by any vessel other than the LNG-tanker. As discussed previously, vessels such as tug boats and ferries associated with the LNG project will likely have direct impacts on gear, and this cost will be unrecoverable, unless the affected party chooses to bring legal action on his own accord. The lease also states that claims resulting from the LNG pipeline construction or use are not eligible under the mitigation program.

Maximum Limit on Payments

The lease also imposes a cap of $4 million on the mitigation program for any given year. From the economic impact analysis later in this report, if the facility increases throughput to the 1 billion cubic feet a day (maximum scenario), the $4 million figure will account for only 50% of the total estimated economic above and below Broad Sound Bell Buoy for a given year.

Because of the potential for significant impact to the fishing industry as a result of the Fairwinds project, the mitigation program assumes a place of central importance in how the project will be viewed by the community. It is clear from the lease agreement as it is written that there will be significant costs not covered by the program. In addition, there is uncertainty about the eligibility of costs such as downtime for lost traps. Before the town moves to vote, there should be a clear understanding of the roles and responsibilities of all parties, so as to avoid conflict in the future.

Clams and Mussels

The shellfish bed adjacent to the shore of the Fuel Depot site has been closed for some time due to potentially contaminated sediments associated with the delivery of fuel to the site. Testing has not been done to determine whether or not the bed is still contaminated, nor has the extent of any possible contamination been determined. The potential for remediation of the shellfish bed connected with the site is unknown at this time.[108]

Shellfish, and clams in particular, are an important part of Harpswell's maritime economy. Harpswell supplied 85 commercial shellfish licenses to residents and 8 to non-residents in 2002. The estimated gross landed value of clams to Harpswell-based fishermen was estimated at $1 to $1.1 million in 1999.[109] Harpswell sold a total of 429 recreational shellfish licenses in 2002[110]. The non-market value of clams in Harpswell was estimated at an additional $110,000 in 1994.[111] Non-market value refers to clams caught and eaten without being sold. There are significant economic multipliers associated with the clam industry that supports dealers, shippers, and people in the restaurant trade as well as commercial diggers. For the Casco Bay region as a whole, the income multiplier associated with commercial clamming was estimated to be between $11.6 and $15 million. These numbers were based on the area of shellfish beds open in 1994. The same study estimated that, if beds then closed (that would have included the Fuel Depot site) were to open, it would nearly double the value of the actual harvest in 1994. This, in turn, would have positive multiplier effects. As of 2003, nearly half of Harpswell's waterfront is generally closed to shellfish harvesting due to pollution of flats. Volunteers in Harpswell continue to put considerable effort into reseeding and water quality sampling to maintain the shellfish resource.[112]

If the Fuel Depot site were found to be less contaminated than previously thought, and/or remediation of the site were successful, this would add a valuable resource to Harpswell's maritime economy. This opportunity will be lost if the site is used as an LNG Terminal since the beds will be permanently off limits due to security concerns. On the other hand, if the sediments at the site are contaminated, there is a possibility that this contamination may spread if sediments are disturbed through dredging, construction, and/or vessel activity near the site. Re-suspended sediments, if contaminated, may have an adverse impact on plants and animals that are exposed to them. In either case, the use of the Fuel Depot property as an LNG terminal will not have a positive impact on the traditional shellfish-based maritime economy of Harpswell.

Access for Commercial Fishing

Loss of commercial fishing access is already a problem in Harpswell. The 2003 Draft Comprehensive Plan calls on the Town to assure continued access to the water for fishermen and others involved in marine-related activities, and notes that fishermen need places for short-term loading/unloading of gear and minor repairs.[113] In addition, the plan calls on Selectmen to adopt policies that encourage relationships between economic activities and the health of the marine environment.

In 2002, a study by Coastal Enterprises, Inc. (CEI) found many types of obstacles to access in Harpswell, including access to inter-tidal areas lost through no trespassing signs, new coastal property owners closing off/contesting public access, land use access in the form of limited parking, and conversion of working wharves to residential and recreational uses. According to Elizabeth Sheehan of CEI, "We also learned that in southern Maine, coastal property turns over every seven years and now it is down to every three years. This has huge implications for turnover, for [a] sense of rights and responsibilities, of what does it mean to be a coastal property owner, and who has rights to the fishing or fowling or having access to your water." Threats to access were found to include: 1) high taxes, 2) competition from recreational use, and 3) development pressure to use the waterfront in non-water-dependent uses.[114]

With 218.55 miles of coastline, Harpswell has the longest coastline of any town in Maine and perhaps the East Coast. Over 400 commercial resource harvesters use this coastline for groundfish, lobster, sea urchin, clam, worm, seaweed, mussels, scallops, lobster pounds, bait dealing, boat yards, fuel & ice, and co-ops. Of the 2,380 [115] total current boat access resources (including moorings, berthings, slips, and tie-ups) for both commercial and recreational use, 21 percent are used by commercial fishermen. Of the 33 commercial private and public waterfront facilities in 2002, 18 are dedicated to commercial fishing use. Thirty-one percent of commercial fishing access is achieved through private residences that are owned or leased by fishermen. Finally, there are 100 other access points in Harpswell without actual facilities.

Harpswell is seeing a great deal of development pressure that makes this issue of access even more difficult. Between 1990 and 2000, Harpswell's population has grown 5 percent, while its housing growth has been 8 percent. Annual taxes per acre in 2000 were $408.86 and land valuation per acre in 2000 was $19,101.19.

According to the Harpswell Harbormaster[116], access is a problem. The rule is that those with moorings must have access within a half mile of their mooring. Currently, there are 12 public accesses. Parking is a problem related to all water access in Harpswell, and there is little to no space to expand. Apparently, at one time, it was possible to walk anywhere along the shore in the town of Harpswell. As out-of-towners buy up land and more land is subdivided, owners of waterfront land are starting to restrict public access. Private businesses including marinas can provide access for a fee. There is also commercial access through lobster buyers, but this is solely for lobster fishermen. Many small businesses, including fisherman, ferry vessels, marinas, and tourists depend on open access to Casco Bay.

Issues brought up in a fishing study of the town of Harpswell include the following:

- A 1999 Port Inventory infrastructure survey identified 18 privately owned wharves or piers used primarily by the commercial fishing industry in Harpswell. Generally, the conditions ratings for Harpswell facilities were high, with evidence of recent and ongoing maintenance of facilities. Only one facility was identified as having a marine pumpout station.

- Town launch facilities were identified in the 1999 Port Inventory. Of 7 town boat launch or ramp locations identified, only one has any parking, and it is limited to 3-4 spaces.
- Town landings and boat launch facilities exist, and there are other undeveloped publicly owned rights-of-way. However, neither the developed nor the unimproved sites provide space for parking. Preservation of commercial fishing depends on maintaining adequate water access.
- The Town needs to maintain public access to the water. It could purchase or improve rights-of-way for commercial fishing access points or use the Fuel Depot.[117]

The presence of an LNG Terminal, even with the purchase of shorefront land to substitute for lost access to the Depot site, will not, by itself, solve the access issue in Harpswell, and may well complicate it further. At the same time, the Town's opportunity to use the shorefront acreage at the Depot site for public access purposes will be removed.

What are the impacts on the economically valuable fisheries resource of the construction and operation of the LNG terminal?

Jetty/Pier Construction

As discussed in its project description, TransCanada Pipelines and ConocoPhillips intend to extend the existing jetty at the site to a proposed length of 800 feet. This figure, as with every other figure presented by the companies, is subject to change based on actual conditions encountered during the permitting phase and facility construction. Currently the jetty at the site consists of an earth and concrete causeway (solid fill material) connected to a 400-foot by 50-foot pier.[118]

There are a range of impacts associated with the proposed extension of the jetty[119], which are highly dependent on the type of structure used. For example, if the causeway was extended or replaced by a larger one, there will be significant impacts to the marine environment in the vicinity, including a disruption of longshore currents, sedimentation problems, and destruction of important intertidal habitat, which is critical in supporting a variety of marine species.

If the current causeway is not extended, there will still be impacts to the marine environment from the pier extension. Elevated piers shade the waters below, which may limit the ability of submerged aquatic vegetation (SAV) to grow, a primary component of intertidal areas. SAV beds, which are primarily composed of eelgrass in Casco Bay, are critical habitat areas and provide important nursery grounds for many marine species. The degree to which SAV beds are impacted is dependent on the height, orientation, and the width of the jetty.

In addition to the extension, the new structure must be able to accommodate 1,000 foot LNG vessels. TransCanada Pipelines and ConocoPhillips have proposed mooring/breasting dolphins that LNG carriers would use when docking. Although these would most likely have fewer impacts than a continuous structure, such as a pier, construction of these components will further disturb the marine environment in the area, including altering the micro-currents and tidal movements in the area. TransCanada Pipelines and ConocoPhillips have stated that it is committed to minimizing these impacts; however, their range and extent will not be known until the permitting phase is complete.

Dredging

TransCanada Pipelines and ConocoPhillips maintain that dredging will not be required along the carrier route, in the turning basin, or at the LNG docking location, in order to accommodate LNG vessels (38 foot draft); however, the final determination will be based on detailed surveys that will be conducted during the permitting phase.[120] In either case, the larger size of the proposed new class of LNG vessels (up to 200,000 cubic feet in capacity) may necessitate dredging in the future.

The impacts of dredging on the marine environment are dependent on a number of factors including: method of dredging and disposal, channel size and depth, intertidal area, presence and sensitivity of animal and plant communities, and weather conditions.[121]

The degree to which dredging is conducted, if at all, will depend on the parameters at the site in question. Because these details will not be available until the permitting phase, a general description of impacts is given below

<u>Increased Turbidity and Levels of Suspended Sediment</u>

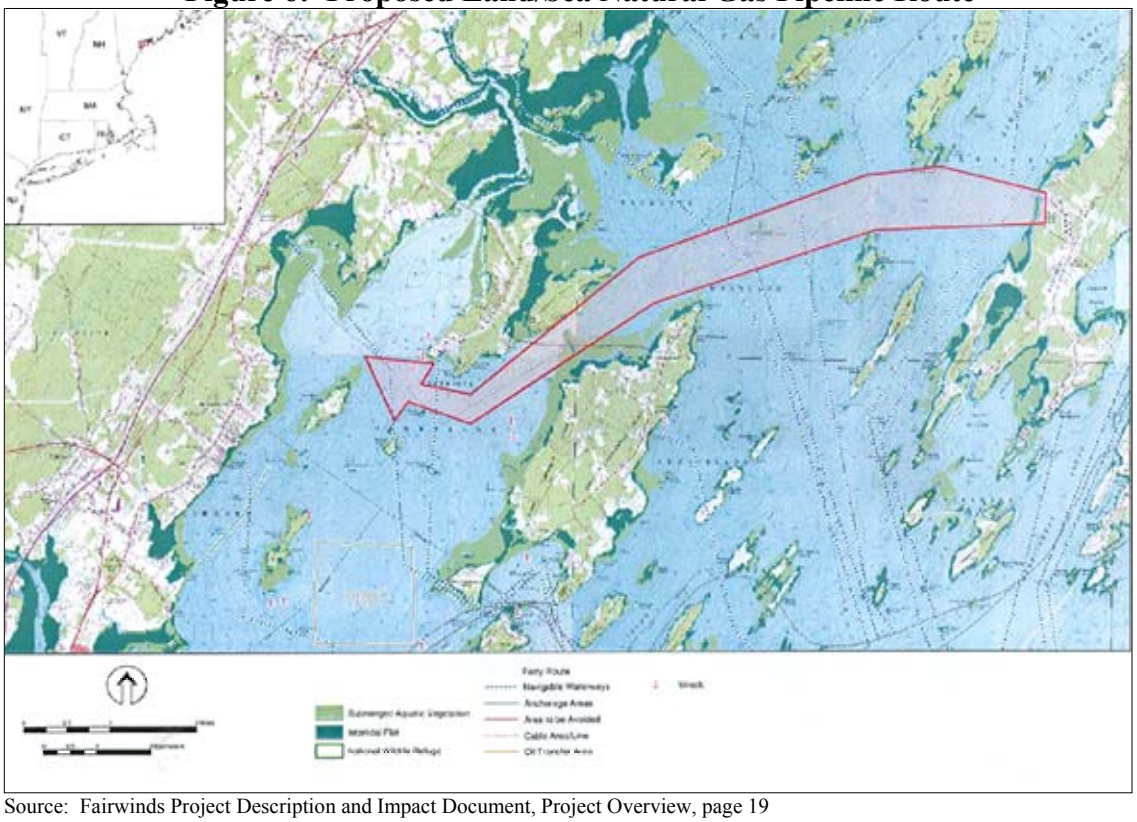
Short-term increases in the level of suspended sediment can give rise to changes in water quality, such as increased turbidity and the possible release of organic matter, nutrients and or contaminants depending upon the nature of the material in the dredging area, which can affect marine flora and fauna.

Increased suspended sediments can affect filter feeding organisms, such as shellfish, through clogging and damaging feeding and breathing organs. Similarly, young fish can be damaged if suspended sediments become trapped in their gills; increased fatalities of young fish have been observed in heavily turbid water. Adult fish are likely to move away from or avoid areas of high suspended solids, such as dredging sites. As suspended sediments settle in adjacent intertidal communities, some organisms that have delicate feeding apparatus can be smothered and suffer from reduced growth or fatality. In general, the effects of suspended sediments and turbidity are generally short term (<1 week after activity) and near-field (<1 km from activity). [122]

Proposed Natural Gas Pipeline

TransCanada Pipelines and ConocoPhillips must construct a new stretch of natural gas pipeline in order to connect the proposed facility to the main distribution network for natural gas. Currently, TransCanada Pipelines and ConocoPhillips are considering two routes for the pipeline: an overland route (approximately 35 miles) and a land/sea route that would cross Casco Bay (approximately 20 miles, 10 of which will be marine). The latter is preferred by the project sponsors.[123] According to the Fairwinds project description, the proposed pipeline route (from the LNG terminal) would pass between the Great Chebeague and Littlejohn islands, and then run south of Cousins Island to a shore crossing in the Broad Cove area (see map below).

Figure 6: Proposed Land/Sea Natural Gas Pipeline Route



Source: Fairwinds Project Description and Impact Document, Project Overview, page 19

Construction

The construction methods used to build marine pipelines are determined by various factors, including water depth, obstructions, weather conditions (summer versus winter), undersea terrain and bottom conditions, the complexity of the alignment (straight versus turning) and potential impacts on the marine environment.[124]

Along the proposed route, there are different sediments that may be encountered, including rock, gravel, sand and mud along the bottom. According to TransCanada Pipelines and ConocoPhillips, "a trench will be dug and the pipeline lowered below the seabed wherever possible and as required by the permits."[125] The type of sediment found

in the proposed route determines what kind of construction process is used, and, ultimately, the extent of impacts to the marine environment.

The type of construction methods used for the pipeline, which are described by TransCanada Pipelines and ConocoPhillips, include:

- **Pre-lay Technique (Conventional dredging) -** Pre-lay trenching involves conventional dredging and trenching (using a bucket or hydraulic dredge) and would occur before the pipeline is constructed across a particular section. This technique is often used in difficult soil conditions, such as hard rock, where more efficient post-lay techniques may not be feasible.

- **Post-Lay Jetting/Plowing** – Post-lay jetting/plowing involves the using equipment to either cut or fluidize sediments (jetting) or plowing a trench into which the pipeline (already constructed) is lowered.

- **Directional drilling** - Directional drilling is an option for construction of the pipeline in intertidal areas or in the transition between water and land. Directional drilling involves using boring techniques and drilling fluids to create a borehole in which the pipeline is drawn.[126]

Potential impacts of these construction methods include:

- disturbance to marine habitat from excavation, dredging and blasting
- disturbance to habitat, displacing species from shelter and increasing their exposure to predators
- contact with equipment for mooring barges
- contact with equipment during anchor line sweeping
- uncovered pipe on the seafloor or an open trench that creates a potential barrier to benthic organisms.[127]

According to the Fairwinds project description, organisms near pipeline construction may be affected in the following ways (depending on the type of construction):

- The organisms with little or no mobility that are in the immediate path of the trench or the anchors will suffer some mortality.
- Others near the trench may be buried.
- Filter-feeding organisms may experience clogging when the turbidity plume from construction activity passes over them
- In some places, the construction activity could cause permanent changes to marine habitat (if rocky habitat is converted to unconsolidated substrate). In other areas, these changes may be temporary. In each case, the type and degree of impacts will depend on the specific behaviors of individual species near the work area.[128]

Lobsters

Because of the importance of the lobster industry in Harpswell, careful consideration should be given to potential impacts to the fishery. Lobsters undergo seasonal migrations. In lobster tagging studies in Casco Bay, female egg-bearing lobsters have been observed to migrate in and out of the bay. Preliminary data indicates that approximately one-third of tagged lobsters have been observed to move from inner Casco Bay to outer Casco Bay, one-third of the lobsters have been observed to move out of state, and one-third have been observed in the same general location as where they were tagged.[129] Interrupting these movements and migrations can have unknown and potentially negative impacts on the lobster populations in Casco Bay.

TransCanada Pipelines and ConocoPhillips have acknowledged that the construction of the pipeline will potentially interrupt lobster migrations. Specifically, there is concern that the pipeline will potentially affect lobsters in the following ways (the following excerpts in italics have been taken from the Fairwinds Project Description and Impact Document, Vegetation and Wildlife Section):

> ***potential physical or psychological barrier*** *— There is public concern that a pipeline resting on or buried in the sea floor may cause a physical or psychological barrier to the natural movement of lobsters during seasonal migration and at other times. In some cases, the lobsters may choose not to go over the barrier and change direction, altering their behavior. A rock covered pipeline may also create a gathering place for predators such as larger lobster.*

Although TransCanada Pipelines and ConocoPhillips claim that their preliminary surveys indicate that there is only a small percentage of the bay floor that will necessitate construction of a raised pipeline, final determination of the extent of exposed pipe will only be made during the permitting phase. The greater the proportion of the pipeline that is exposed, the greater the potential for the pipeline to act as a physical and/or psychological barrier.

> ***potential effects of noise, temperature and vibration*** *— There is public concern that vibration or temperature changes from the pipeline could affect lobster behavior. Although lobsters have been shown to be extremely receptive to temperature changes, it is unclear how these changes affect their behavior.*
>
> ***electromagnetic fields*** *— Corrosion protection devices and the flow of gas in pipelines create electromagnetic fields. Many biologists believe that lobsters use the earth's magnetic fields to migrate. And so, it is possible that pipeline-related electromagnetic fields could interfere with lobster migration.*

Currently, there is no clear scientific consensus on how noise, temperature, vibration, and electromagnetic fields associated with the pipeline may affect lobsters. In Goldsborough, Nova Scotia, area fishermen have stated that it is more difficult to trap lobsters near a buried natural gas pipeline than elsewhere. The Sable Offshore energy project pipeline's Environmental Effects Monitoring Program has neither confirmed or refuted this claim at the current time. Some believe that lobster larvae are also negatively affected by the pipeline[130].

All of these potential impacts would be lessened if the pipeline is buried under the bay floor; however, there is a possibility that they still would interfere with lobster migrations. If these attributes do act as a barrier for the lobsters, even if the pipeline is buried, the migration patterns from inner to outer Casco Bay could be significantly altered, which, in turn, could profoundly alter the stability of the resource in the region.

> ***bottom disturbance from construction activities*** *— Installing an offshore pipeline will disturb the seafloor, especially if the pipe is lowered into the trench. If this activity occurs in areas highly populated by lobster, it could change their behavior, at least in the short term. There is also some public concern that blasting activities may displace lobster or alter their behavior over the long term.*

During installation of the pipeline in the seafloor, lobsters residing in the bottom sediments could be disturbed or killed. As part of the permitting phase, TransCanada Pipelines and ConocoPhillips will most likely be required to assess the current population of lobsters along the proposed route. If the population within the proposed route is significant, a mitigation plan may be required in order to minimize the pipeline's impact. A guideline threshold density of 0.1 per meter square as the definition of a significant population has been established by the Maine Department of Marine Resources.

> ***turbidity and sedimentation*** *— In the past, there has been concern from some members of the public that pipeline-related turbidity and sedimentation can harm lobster. Based on previous channel and port dredging projects in lobster areas, Fairwinds believes that these effects will have minor and short-term impacts on lobster.*

Although not as acutely affected as other species, such as shellfish, increased turbidity can have negative impacts on lobsters. However, it is believed that the effects from suspended sediment and increased turbidity will be localized and temporary.

> ***lobster fishing*** *— Perhaps the greatest potential issue associated with lobster is the impact of pipeline activities on lobster fishermen. Besides direct effects to lobster, the project could affect the lobster fishery, especially during construction of the berth and pipeline facilities and the operation of LNG carriers.*

During construction of the pipeline, lobstermen will be directly impacted by being barred from access to fishing grounds. The degree to which these fishing grounds will recover and be productive after construction is complete is determined, in large part, by the magnitude of the potential impacts mentioned above. There will also be indirect effects, such as increased congestion in the area due to the presence of barges and other ships associated with the facility's construction.

Where the channel or berth has been subjected to continual maintenance dredging over many years, it is unlikely that well-developed benthic communities will occur in or around the area.

What impact is the proposed LNG terminal likely to have on recreation and tourism in Harpswell?

In 2001, travel and tourism in the State of Maine generated $8.9 billion in sales of goods and services, 115,000 jobs, with a payroll of $2.5 billion, and $344 million in tax revenues. The same study indicated that the southern coast was the most popular tourist destination in 2001. In fact, both Portland and Freeport, located in the Casco Bay region are both in the top five most visited destinations in Maine.[131]

There are a number of sources that point to the importance of recreation and tourism in the local and regional economy. A tourism study in the late 1980's estimated that tourism-related expenditures exceeded $250 million for the Casco Bay region.[132] There is no doubt that these figures have increased significantly since the time of the report. In 2002, taxable restaurant and lodging receipts for the Brunswick Economic Summary District of which Harpswell is part were $16,656,000. In Harpswell, 33 % of housing units and 45 % of rooms are for seasonal, recreational or occasional use.[133] Many jobs in the community and the region are tied to recreation and tourism.

Harpswell's 2003 Draft Comprehensive Plan calls on the community to "develop and implement a nature-based tourism strategy that supports the environment and complements the growth of the local economy. Nature based tourism is driven by interest in recreation and observation in nature-the ocean, marshes, woods, fields, ponds and their wildlife. Sport fishing, boating, bird-watching and even hunting are examples." Although it is difficult to tell to what extent the proposed project will impact tourism revenues, it is possible to discuss, in general terms, how the project will affect tourism in the area and what areas will be most likely be impacted.

The proposed LNG project will affect tourism in the area in a number of ways. First, the LNG facility and its associated vessels are likely to be seen as a disamenity to many tourists who are otherwise attracted to the area because of its natural beauty and unique character. In addition, people who plan to visit certain sites near the proposed path of the LNG vessels may have their trip negatively impacted by approaching vessels (i.e. time delays, cancellations). These impacts can lead to fewer tourists visiting the area, which, in turn, will generate less revenue for local businesses and the town itself.

<u>Recreational Boating</u>

There are approximately 380 moorings along the west coast of Harpswell Neck, Middle Bay and in Potts Harbor.[134] These moorings are worth an estimated $3,230,000 in direct spending on fuel, supplies, insurance, repairs, and groceries associated with boating, and $14,535,000 in net benefits to Harpswell's economy through income and employment multipliers.[135] Recreational boating has experienced "explosive growth" in recent years and the demand for moorings continued to rise, with pleasure boats consuming an increasing portion of total moorings.[136] As it stands today, there is already a significant degree of crowding in the harbors and there has been a big increase in non-

commercial boat traffic, especially recreational boats, in upper Middle Bay. LNG-related traffic will undoubtedly contribute to congestion in these waters.

The specific impacts of the proposed project on recreational boating are similar to those affecting fisherman and include increased delays and re-routed trips related to increased levels of congestion and the effect of the security zones (see section on impacts of LNG traffic). Depending on their location and destination in relation to the security zones, some will be more affected than others.

Private Cruise Lines

There are a number of private cruise lines that operate in the Casco Bay area. Depending on the route of their trips, these tour operators may be impacted by vessel activity associated with the facility during construction and operation. Because most private cruise lines operate on a very tight schedule, any delays could significantly interfere with operations. During the construction phase, there may be some delays due to a greater degree of congestion in the Bay as barges, ferries, and other ships ferry people and materials between the Portland area and Harpswell. During the operation phase of the project, there is the potential for delay and cancellation of trips due to the enforced security zones that surround incoming LNG vessels. A number of private cruise lines were interviewed to better understand how the project would impact their businesses.

Tom Ring, owner of the Atlantic Seal Cruises, currently manages two trips a day to Eagle Island during the tourist season (June 15 through Labor Day). Eagle Island is a state historic site and is home to the summer residence of the late Admiral Robert E. Peary, discoverer of the North Pole. The island permits visitors during the above months and charges a small fee to enter the Admiral's home. A small hiking trail is also available for island explorations. Mr. Ring indicated that if the arrival of LNG vessels were anticipated during one of his trips to the island, he would be forced to cancel his trip. Mr. Ring said that many of his clients book trips months in advance and stay in Freeport before and/or after their trip to the island. It is possible that cancellation of these trips may not only be a disincentive for future trips to the island, but may also have an indirect effect on regional tourism.

Mr. Ring also operates a tour that visits Seguin Island two times a week, which is one of the rarest lighthouses in the country.[137] He feels that this tour would be similarly impacted by the approach of an LNG vessel. Mr. Ring estimates that for each trip that is cancelled (either to Eagle Island or Seguin Island), the lost revenue would be approximately $500. Assuming one trip cancellation per LNG tanker transit from May through September, the revenue lost to Atlantic Seal Cruises is estimated at $18,500 to $59,500 for a single season.

Coast Watch and Guiding Light Navigation is a private tour line that operates out of Portland. In addition to scenic tours of Portland Harbor and Casco Bay, this company also offers daily seasonal cruises to Eagle Island. Bill Frapier, who runs the tour line,

indicated that if LNG vessel traffic causes delays to his trips, it would significantly affect his business. Mr. Frapier estimated that the average revenue generated from a trip to Eagle Island is approximately $575.

Casco Bay Lines, another private tour line operating out of Portland, offers a 5 1/2-hour cruise to Bailey Island. Nick Mavodones, Operations Manager at Casco Bay Lines, indicated that LNG vessel traffic would most likely not unduly affect this trip.

Chartered trips, although many do not have the tight itineraries of private lines, may also be directly impacted by LNG vessel traffic.

Key Recreational Destinations

There are a number of recreation and tourism-related destinations that may be directly affected by the construction and operation of the proposed LNG facility. Residents and tourists alike use Casco Bay for wildlife viewing, sightseeing, sail boarding, sea kayaking, and recreational fishing and hunting.

Marinas and Public Boat Ramps and Docks

Many people who do not have access to private moorings use marinas, public boat ramps and docks when recreating in the area. Specific sites that have a greater chance of being impacted include the Harpswell Boat Ramp at Lookout Point, Paul's Marina (approximately 100 moorings), and the Town Dock and Dolphin Marina (approximately 80 moorings) in Pott's Harbor.

Eagle Island

Located at the entrance of Broad Sound, Eagle Island is a popular destination for many tourists. This historic landmark has the potential to be greatly impacted by the proposed LNG facility because of its proximity to the LNG vessel route (within 1,000 yards of the navigation channel). Between May and September of 2002, there were 6,428 visitors to Eagle Island.

Whaleboat Island

In 2002, the Maine Coast Heritage Trust (MCHT), a statewide land conservation organization, purchased Whaleboat Island, which located immediately adjacent to the proposed LNG route. Whaleboat Island attracted approximately 281 people (130 boats) in 2003 and is a popular destination for kayakers and nature-lovers. The MCHT has promoted the virtues of the 125 acre island in a paid advertisement and has held it up as "an example of why Mainers should support another round of funding for the Land for Maine's Future program."[138] Access to Whaleboat Island will be impacted by LNG vessels.

What alternatives exist to a land-based LNG terminal to meet US energy needs?

Offshore terminals

Offshore LNG terminals serve the same function as land-based terminals but do so offshore, away from settled areas, thus reducing risk of injury to people and property in the event of accidents or terrorist attacks. Offshore terminal design seeks to avoid community opposition and permitting obstacles, which have delayed or prevented the construction of new on-shore LNG facilities. Because offshore terminals would be located far from land, they also would present fewer security risks than land-based LNG terminals.[139]

According to WorldOil.com, LNG production and importation will increasingly move offshore as a way to overcome political, financial and security concerns associated with land-based terminals. New technologies are rapidly developing that have the potential to be faster to build, less expensive, much more secure, and more acceptable to communities than conventional alternatives. Offshore terminals offer lower construction and operating costs, the ability to locate a terminal in deeper water (eliminating the need for dredging and increased availability), safety and reduced voyage time (LNG carriers need not enter congested waters). [140]

New more flexible offshore designs may also serve East Coast markets. Exmar and Hoegh LNG have devised pumping, vaporization and offloading systems for their LNG carriers. By using these ships, importers may be able to afford to serve Massachusetts in winter and Florida in summer. These systems rely on much smaller investments in stationary equipment; they will use turret-and-buoy systems, which cost just one-fifth of the cost of traditional shore-based terminals. The bulk of the investment is in the transport ship. Consequently, developers can build multiple turret-and-buoy systems to serve peak markets.[141]

In 2002, the American Bureau of Shipping issued a *Guide for Building and Classifying Offshore LNG Terminals* intended to facilitate industry development of floating terminals for offshore installation.[142] The U.S. Congress recently passed legislation that will make it easier for companies to test offshore LNG technology in the U.S. and will provide definite time frames for permitting.[143] Two applications for offshore LNG terminals are currently being considered, one in Port Pelican, Louisiana and the other also in the Gulf of Mexico. It is considered only a matter of time before an application will be submitted for an offshore terminal to serve the East Coast.

Thus, offshore LNG terminals are becoming a real alternative to land-based terminals for meeting U.S. demand for natural gas.

Energy Efficiency

An alternative to increasing our reliance on foreign energy resources is energy efficiency. Energy efficiency means getting more out of each unit of energy we use. For example,

energy efficient light bulbs use one-fourth the energy of regular light bulbs to produce the same amount of light. Many energy efficient appliances, from computers to air conditioners, are available today that use far less energy to provide the services we desire. Energy efficiency is not about doing less or even necessarily curtailing our appetites; it is about getting what we want in smarter ways by using the best available technologies and not wasting what we have got. It is more cost-effective to reduce demand than it is to increase supply. If we employed technologies that exist today to increase the efficiency with which we use energy, we could avoid half or more of the projected need for new power plants, and, with it, the need for imported LNG. Since the oil embargo of 1973, the United States has gotten more than four times as much new energy from savings as from all net expansions of domestic energy supplies put together. If we were as efficient today as our competitors in Asia and Europe, we could save $200 billion a year in energy costs.[144]

The citizens of Harpswell have already recognized the need for a different approach to energy. Here is an excerpt from Harpswell's 2003 Draft Comprehensive Plan:

> "*Energy" refers to the resources used to power our world. Our reliance on fossil fuels to power our economy and heat our homes costs our society greatly in direct costs to obtain and process these resources, and in indirect costs in the form of pollution and adverse health impacts. Global warming continues to be a related concern. Fossil fuels are finite, whereas other sources of energy are renewable and increasingly viable, including solar power, wind, wood, corn, and soy. Conservation is the easiest way to reduce direct costs and indirect costs of energy. Opportunities exist for individuals and groups to choose alternative energy sources to achieve environmental conservation.*

What, if any, alternative uses are there for the Fuel Depot property?

The Fuel Depot property represents a very valuable asset for the Town of Harpswell. There are many possible uses of the site that would be in keeping with the Town's traditional economic bases of fishing and recreation/tourism, more nearly match the scale of existing development, carry lower levels of potential risk and danger, and enhance the values of surrounding properties. Such potential uses could include an educational or research institution such as a marine sciences center, an aquaculture facility, designated open space for recreation and public access to the waterfront, light industrial and/or commercial development, affordable housing, etc. If the Town of Harpswell enters into a non-revocable lease agreement with TransCanada Pipelines and ConocoPhillips, these other options will no longer exist at the Fuel Depot site. Therefore, the opportunity cost of foregoing alternative uses of the site should be factored into any decision.

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[22] Ibid, Section 14.5.
[23] Ibid, Section 33.3(c)

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[27] Municipal Development Districts, 30-A, Section 5225 D.
[28] Town of Harpswell Fairwinds Municipal Development District and Tax Increment Financing District Development Program, p. 1.
[29] Ibid, p.4.
[30] ibid, p.3.
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[37] Title 30-A M.R.S.A. Section 5702 which sets lower debt limits for school debt (10%), storm or sanitary sewers (7.5%), municipal airports (3%), and then goes on to say, "provided, however, that in no event may any municipality incur debt which would cause its total debt outstanding at any time to exceed 15% of its last full state valuation, or any lower percentage or amount that a municipality may set."
[38] Figures from the Harpswell 2002 Town Report
[39] The Town is losing elementary school age population. It has lost some 36% over ten years, down from 359 students in 1990 to 255 in 2000. This loss is partly due to the move of grade 6 to Mt. Ararat Middle School. Enrollment was 21% less, due to population losses, prior to the move of grade 6. A concern is the continuing viability of the West Harpswell School. Draft Comprehensive Plan, Town of Harpswell, 2003.

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[89] Cumberland County – unemployment rate Jan, Feb, Mar-3.0 (max) Apr – 2.9 May, July, Aug – 2.6 Jun-2.8, 2003. Portland MSA unemployment rate 3.0 in Jan (max) to 2.5 in May and July, 2003
[90] Personal communication, Gail McMann, Maine Department of Transportation, December 3, 2003.
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[94] Bruce C. Mayberry, Bruce C. Town of Harpswell Fishing Industry Profile. September 1999, Page 17.
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[96] Mayberry, Page 23.
[97] Harpswell Community Anchor Forum, www.harpswellanchor.com. 12/2/03.
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[100] Fairwinds has stated that it will begin LNG shipments during daylight hours. (Fairwinds Project Description and Impact Document, Project Overview, page 18).
[101] Harpswell Town Plan, 2001-2002.
[102] Conversation with Joe Peterson, Harpswell Harbormaster, 12/10/03.
[103] Mayberry, Page 29
[104] Fairwinds Project Description and Impact Document, Project Overview, page 39.
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[119] As described in the Project Description Glossary, Fairwinds describes a jetty as a "a broad term used to denote or encompass any man made structure that extends into a body of water from the shore that accommodates the mooring and offloading of vessels; also a landing wharf, or the protecting frame of a pier."
[120] Fairwinds Project Description and Impact Document, Project Overview, page 25.
[121] Environmental Impacts of Maintenance Dredging and Disposal. Source: http://www.ukmarinesac.org.uk/activities/ports/ph5_2.htm
[122] Environmental Impacts of Maintenance Dredging and Disposal. Source: http://www.ukmarinesac.org.uk/activities/ports/ph5_2.htm
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[124] Fairwinds Project Description and Impact Document, Project Overview, page 26.
[125] Fairwind's response to questions, received 12/1/03 by Yellow Wood Associates
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