New Fortress Energy: Promises to Keep

Company’s Short Track Record Misses Development Goals and Volume Sales Are Weak; Rising Electricity Prices, Environmental, Climate and Governance Concerns Cloud Future Outlook.

Executive Summary

The business model for New Fortress Energy (NFE) supports the expansion of natural gas use around the world. The company's financial progress has been slow. For a new company entering risky markets, asking investors for patience is not unreasonable—but ignoring red flags is perilous.

To date:

- The company's promise to investors to develop five to ten new liquefaction facilities by 2024 is unlikely to materialize. It currently owns one small liquefaction plant in Miami, Florida. Since November 2018, the company has not acquired or demonstrated substantial progress on any new liquefaction assets. The failure to build liquefaction assets exposes the company and its customers to market and price risks.

- Sales growth from its more mature assets in Puerto Rico and Jamaica have been slow to materialize. The company's utilization rates have been far below both the market average and maximum capacity levels.

- Recently, the Sagicor Group, a prominent full-service investment house in Jamaica, pulled its equity pledge of $100 million from a power plant refinancing deal. NFE lost an opportunity to reduce debt levels that have been increasing as the company has added assets.

- Jamaica and Puerto Rico consumers have experienced significant electricity price increases linked to the electric grid's dependence on natural gas.

- In New Jersey, Pennsylvania and Puerto Rico, community concerns have resulted in litigation by or with the Federal Energy Regulatory Commission (FERC) and significant delays in a priority liquefaction project. An NFE project in Ireland faces considerable opposition from political and community organizations.

From a climate perspective, NFE's rationale is bankrupt. The Intergovernmental Panel on Climate Change (IPCC) and International Energy Agency (IEA) have sounded alarms that the world cannot afford more new oil and gas projects. Major
financial institutions are warning community and national governments to think twice about overexposure to natural gas. Market and policy analysts emphasize the expanding need, desirability and affordability of renewable energy investments.

For the most part, NFE’s natural gas planned facilities are unnecessary, unwelcome and unaffordable.

**NFE’s presence in the market creates a risky financial and dysfunctional economic dependence on natural gas as a future resource for host nations and communities.** In most instances, its new projects expose host communities to higher electricity prices and undermine efforts to build cheaper, more reliable and environmentally sound renewable energy.

Often, investors and host communities where the company has set up shop have not seen promised investment results, fiscal or consumer savings. In Puerto Rico, one of NFE’s successful projects, the company’s upgrade of a local power plant and delivery of LNG has not resulted in promised budget savings for Puerto Rico’s public utility. In its facilities in Jamaica, NFE’s business performance is marginal and natural gas prices have been cited as a cause of serious inflationary pressures. After four years of operation at its first and only liquefaction plant in Miami, the company has seen—at best—a 35% utilization rate in the U.S. market where facilities normally achieve more than 90%.

In places where the company is expanding such as Mexico, substantial market warnings to the government and investors that the country is overbuilding its natural gas capacity are being ignored. In Brazil, where NFE has taken a big bet on natural gas, there are serious questions about inflationary pressures. NFE has struck agreements in Nicaragua and Sri Lanka, both countries facing high levels of political and economic uncertainty, and where natural gas market volatility can only compound existing political and fiscal tensions.

In Pennsylvania and New Jersey, dozens of local city councils have expressed safety and health concerns. Citizen groups cite serious risks from natural gas transport are being met by the company with attempts to dodge responsible oversight of their plans to develop new processing plants, shipping logistics and terminals.

In Ireland, the company’s recent attempt to revive an infrastructure project resurrected substantial opposition. Ireland recently issued a moratorium on new natural gas infrastructure projects and adopted a national Climate Action Plan that maximizes renewable energy.

At the end of the third quarter of 2021, the company showed a $19 million gain, its first gain since 2016. The positive financial news driven by higher natural gas prices, volume sales and new assets in Brazil was met by improved ratings from credit agencies and a new stock issuance. The company also experienced growing expenses from rising natural gas prices, development outlays and interest payments from rising debt levels.

Looking forward, 2022 is a pivotal year for the company. As the year starts, NFE is:
Building a large portfolio of development projects that requires more than $3 billion in actual cash through 2023 against the company’s $2 billion cash resource projections, much of which is unlikely to materialize.

Working on at least 16 projects that are slated for completion by end of 2023. The projects have a high degree of execution risk that is related to market demand, political and policy uncertainty.

Working with a track record of operational results that are underwhelming. Even where NFE has been active in markets for more than five years, actual deliveries of natural gas and anticipated customer demand fall far short of capacity.

Relying on a business model that is in direct conflict with global goals that call for substantial reductions in CO₂ emissions. The company is supporting some national government policies that promote continued gas drilling. In other places, it is undermining government policies and global efforts to promote climate healthy policies.

NFE launched a business five years ago that integrates natural gas processing with transportation logistics and end user delivery and service. The company’s customer base is scattered across a range of economic and political systems, introducing wide variability in the quality of NFE’s business partners and partner nations.

It remains to be seen whether these host economies have a growing customer base that can support profitable operations or whether the company’s maiden contracts that usually contain only minimum volume requirements are actually the upper limit of the market.

The company’s talents will be tested in 2022:

- Can NFE bring deals in Nicaragua, Brazil, Ireland and Sri Lanka from initial agreements to contract, construction and operation?

- Can the company settle on development plans and repair its damaged credibility for its liquefaction facility in Wyalusing, Penn., and its companion terminal operations in Gibbstown, N.J., that will satisfy a geographically wide range of communities and multiple levels of health, safety and environmental regulations?

- Can the company bring its Brazilian construction projects to fruition? And will the Brazilian economy and regulatory system support NFE’s newly acquired terminal and natural gas power plant expansions?

- The company also will demonstrate in 2022 whether its foothold in Puerto Rico with deliveries to the San Juan natural gas/diesel plant and sales to industrial users represents a fixed ceiling or a launch pad for more natural gas investment. Its projects have been the subject of substantial controversy. Currently, Puerto Rico’s law and integrated resource plan (IRP) call for
substantial increases in renewable energy to improve the commonwealth’s environmental standing, grid resiliency and balance sheet.

- Is the recent withdrawal of Sagicor Investment from NFE’s power plant in Jamaica an indication that equity partners are skittish and the company faces greater pressure to increase debt use beyond responsible limits?

- Can the company’s use of the individual wealth of co-founders Wes Edens and Randal Nardone—coupled with new debt, more stock issuances and new revenues—sustain the ambitious development plans the company has launched?

The company faces logistical, technical and financial risks, and its brand as a global player in the natural gas markets puts NFE plans in direct conflict with climate policies while creating natural gas assets that are unlikely to improve troubled national economies.

Table 1: Primary Climate and Environmental Impediments

<table>
<thead>
<tr>
<th>Location</th>
<th>Primary Climate, Environmental and Financial Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennsylvania</td>
<td>Regional, local government resolutions in opposition - safety/health</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>LNG crowds out renewables; failed to create savings; price inflation.</td>
</tr>
<tr>
<td>Miami, Florida</td>
<td>Underperformance/lack of transparency</td>
</tr>
<tr>
<td>Jamaica</td>
<td>LNG crowds out renewables; dependent natural gas/price volatility</td>
</tr>
<tr>
<td>Brazil</td>
<td>LNG crowds out renewables; dependent natural gas/price volatility</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>Unstable political and economic environment</td>
</tr>
<tr>
<td>Ireland</td>
<td>Green Party policy opposition on environmental and climate grounds</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Heavy reliance on LNG introduces price/volatility risks</td>
</tr>
</tbody>
</table>

A. Conclusion

NFE’s business investments are on a collision course with global policy and capital allocation trends away from fossil fuels. The company claims its products curb emissions, but the expansion of natural gas is not climate neutral. The Intergovernmental Panel on Climate Change (IPCC) research shows that global methane emissions must be reduced at least 40% by 2030 to curb global warming to 1.5°C this century. President Biden’s special envoy for climate has identified the reduction of methane emissions as the top priority of climate policy.

The company’s claims that it is often replacing heavy polluting oil and diesel fuel resources with lower-emitting natural gas poses a false choice, since growth in renewable energy and other green investments now provide cheaper, more efficient and cleaner alternatives. In most of the countries, plans exist for the expansion of renewable energy. For NFE to succeed, the expansion of renewable energy must be reduced, delayed or cancelled as a matter of politics—not sound energy, climate or economic policy.
The company’s plans to assist countries to grow natural gas resources will frustrate the national economic development goals of host countries. By pushing out the development of renewable energy investments in favor of natural gas, host countries and communities are increasing dependence on an energy resource that exposes economies to inflation, volatile pricing and the high likelihood of stranded assets with its attendant negative impacts on investment and banking performance.

The company acknowledges the highly speculative nature of its business and execution risks in the countries where it is doing business. At present the company has plans for no fewer than 16 new portfolio assets, including liquefaction facilities, on and offshore gasification assets, power plants and terminals. To date, the company has financed its operations on individual investments from its principals, additional stock issuance, borrowing and cash from operations. With the exception of the United States and Ireland (where political opposition is the strongest), most of NFE’s plans will depend on uncertain economic growth in emerging markets. Some of the host governments, already wracked by the COVID-19 pandemic are unstable politically and financially.
Methodological Note: NFE Financial Reporting Anomalies
Hinder Transparency

NFE started as a small company in the LNG space. Its growth hinges on an aggressive acquisition and build strategy. Its assets are designed to generate diversified revenue growth.¹

A number of NFE’s financial reporting techniques contain irregularities that make it difficult to obtain an accurate view of its current business size and ultimately the trajectory, magnitude and durability of its advertised growth plans.

The financial presentation issues identified in this section run as a continuous impairment for any investor seeking to understand the company’s achievements and challenges. NFE is a publicly traded company. As such, its ability to obtain and maintain investor confidence is critical. The high-risk nature of the business only increases the importance of transparency.

NFE measures the volume of liquefied natural gas that it buys, sells, processes and handles in gallons per day (gpd). The typical volume measurement in the industry is million tonnes per annum (MTPA).² The use of gallons per day in a financial presentation creates a misleading impression that the company’s capacity is significant, when in fact it is quite small. For example, NFE’s first and only liquefaction facility in Miami has a capacity of 100,000 gallons per day. This translates into 58,776 tons per annum.³ The Miami facility is the smallest liquefaction asset in the United States.⁴ The active permitted liquefaction facilities in the United States range in size from 2.75 million to 34.5 million tonnes per annum.⁵

For purposes of this report IEEFA has adopted NFE’s gallons per day accounting treatment to adhere as closely as possible to the company’s own description of its financial condition. However, understanding the small size of the plant helps to clarify the company’s weak financial performance. The Miami plant, for example, has never surpassed an annual 35% utilization rate (See: Miami Liquefaction Project, [188x207]The recent Brazil acquisitions have added substantially to the company’s asset base and are expected to make a substantial contribution to company revenues during 2022 (See: Section II, C, 4 Brazil).
² See: Global Tech Australia. Conversion Tables. Accessed January 26, 2022. Also see: NFE. NFE Miami Liquefier Virtual Tour, Accessed February 14, 2022). According to NFE the Miami facility has a capacity of 0.1 Mtpa (Mtpa = million tons per annum) or 100,000 tons per annum.
³ Conversion Tables, [Ibid.](Ibid.).
⁴ IHS Markit, Liquefaction Database: United States. Accessed January 23, 2022. (Proprietary) New Fortress Energy’s Miami Liquefaction facility is not included on a list of six FERC permitted liquefaction facilities. If it were included, it would be the smallest facility by far. The only facility closest to Miami is Kinder Morgan’s Elba Island facility with a capacity of 2.75 Mtpa.
Further, in New Fortress Energy’s financial presentations, the company utilizes an unusual net revenue projection of future operations under the rubrics “Illustrative Segment Operating Margins,” “Illustrative Total Segment Operating Margins Goal” and “Illustrative Future Goal.” This accounting treatment creates what is effectively a future projected revenue. The augmentation is not quite a revenue guidance that is typically used by companies, but it is not a reckless accounting contrivance either. It serves as a kind of additional layer of financial reporting that is a highly optimistic projection of performance.

For example, the company states in an investor presentation that the revenue calculation embedded in the treatment is based on "binding contracts." NFE’s typical contracts reportedly contain minimum volume amounts. This is misleading. The company’s illustrative revenue calculation is based on volume projections that are “substantially in excess of such minimum volume commitments.” In the December investor presentation, NFE uses this accounting treatment 16 times to explain to investors how they should look at the company’s current and future operations. No other company that IEEFA is aware of utilizes this approach to describe forward-looking net operating results. This accounting treatment is an unfortunate and unnecessary distraction. The treatment conjures up the perception of robust revenue growth.

Finally, the company does not fully inform its investors when the company fails to meet development benchmarks. NFE makes clear in its filings with the Securities and Exchange Commission (SEC) that it is a high-risk business operating in many places with marginal sovereign credit ratings, unstable economic and political environments where the company has little actual experience.

These acknowledged weaknesses suggest the need for more and more frequent reporting. In many cases, the company fails to report project development status in a timely manner—particularly when projects appear to be stalled or canceled. For example, the company has often made announcements or discussed its corporate activity reflecting commitments in Angola, the Dominican Republic, the

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9 NFE. *NFESigns MOU With Angolan Ministries to Advance Natural Gas Infrastructure*. June 5, 2019. NFE reports the development status of projects in the predevelopment, FID and In Construction stage. NFE. *Operational Facilities*. Accessed January 24, 2022. Angola is not on that list.
10 NFE. *Form 10K*, March 2019. The Dominican Republic is not on that list.
Philippines, and Titusville, Fla. When projects are stalled or canceled and this is not disclosed, investors are left in the dark. The reasons for the cancellation are essential for investors to know whether projects are well managed or not. To IEEFA’s knowledge, none of these projects are moving forward in the development process. For example, the Titusville, Fla., project had its permit application rejected by the Department of Transportation (DOT) in 2018.

NFE is adding assets and expecting commensurate revenue growth. Its business model is high risk and profitability will be difficult to achieve. Clear, accurate, consistent and reliable reporting is warranted.

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11 NFE. NFE Signs MOU Philippine National Oil Company. October 15, 2020. NFE reports the development status of projects in the predevelopment, FID and in-construction stage. Also see: NFE. Operations. Philippines is not on that list.


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I. Background\textsuperscript{14}

A. Origins and Business Strategy

New Fortress Energy's goal is to develop natural gas infrastructure that is clean, reliable and an integral part of local, regional and national economic development strategies. New Fortress Energy's Miami liquefaction facility and Montego Bay, Jamaica terminal commenced commercial operations in 2016. The company launched its initial public offering in 2018 as an integrated gas-to-power company that uses "stranded" natural gas to satisfy the world's growing demand for natural gas.\textsuperscript{15} The business model invests in host communities to diversify energy resources (by adding natural gas), reduce energy costs, build strong margins and contribute to pollution reduction strategies worldwide.

As a player in the liquified natural gas (LNG) space, NFE's integrated approach consists of linking assets in the LNG economic chain. Its strategy outlined in its 2018 IPO includes plans to:

- Build liquefaction assets supported by long-term, fixed-price contracts for feedgas that is strategically located to maximize extraction, processing, pipeline and transport networks. The company's 2018 IPO offered a "plan to develop five to ten additional liquefaction facilities over the next five years." NFE's objective is to supply "all existing and future customers with LNG produced primarily at our own liquefaction facilities."\textsuperscript{16} Control of a sufficient quantity of LNG would reduce company and customer risk from volatile natural gas prices, particularly during periods of high prices;

- Own and control LNG logistical assets that link liquefied natural gas by truck and rail to terminal loadings on large marine vessels;

- Charter and own shipping assets, liquefied natural gas carriers (LNGCs) and floating storage and regasification units (FSUs and FSRUs); and

- Build 10 to 20 downstream terminal assets during the next five years to deliver natural gas to service household and business power needs and industrial uses.

Through a combination of these assets, the company plans to generate fuel and capacity sales. NFE expects to generate revenues in the range of $8 to $10 per million metric British thermal units (MMBtu) across a diverse customer base with varying sizes, volumes, credit profiles, infrastructure requirements, generation mixes and delivery systems.

\textsuperscript{14} Except as otherwise noted this section draws from New Fortress Energy. Form S-1. November 9, 2018.

\textsuperscript{15} The company uses an operational definition of stranded reserves to refer to natural gas reserves not connected to larger interstate or transnational pipelines and without linkages to end users.

\textsuperscript{16} NFE. Form S-1, pp. 6-7.
NFE and its numerous subsidiaries are financed through a series of individual and banking loans and stock issuances. At the time of the IPO, Mr. Edens owned a substantial majority of the company’s equity.

The company has a current market capitalization of $4.8 billion. As of November 2021, NFE Energy Inc. is a “controlled company” with Wes Edens and Randal A. Nardone jointly holding more than half of the company’s stock.

Since the launching of the company in 2016, New Fortress Energy and its subsidiaries have commenced discussions or closed on development and supply contracts in Jamaica, Puerto Rico, Pennsylvania, Miami, Ireland, Sri Lanka, Nicaragua, Brazil and Mexico.

**B. Bond Ratings**

NFE holds a B1 rating and was upgraded with a positive outlook from Moody’s in December 2021. The recent upgrade of the outlook to positive comes on the heels of the Brazilian acquisitions. NFE has successfully navigated two stock offerings. In November 2021, both Fitch and Standard & Poor’s affirmed ratings in the BB family. All have noted that the 2021 bumps in revenue from Puerto Rico, Jamaica and Brazil have been credit-positive.

**C. Stock Performance**

NFE is traded on the NASDAQ exchange. The company’s stock peaked in December 2020 at $60 per share and since then has posted a steady decline to the low $20-per-share range at the beginning of 2022. In 2021, the company’s price dropped

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17 New Fortress Energy LLC (NFE LLC) was formed in 2018. In August 2020, NFE LLC was renamed New Fortress Energy, Inc. (NFE, Inc.). For the purposes of this paper, IEEFA refers to NFE and its subsidiaries as NFE. See: NFE. Preliminary Prospectus Supplement; Form 424(b)(5). December 15, 2020. A supplemental stock issuance of $150 million Class A shares was completed in December 2020.


21 Moody’s. Moodys changes outlook on NFE Bond ratings to positive. December 2, 2021.

22 Form S-1, op. cit.


by 50%, from $52 per share to $24 per share. The energy sector as a whole led the stock market with an increase of 53%.

Significant shareholders include Great Mountain Partners, Fortress Investment, Federated, Vanguard, Hermes, State Street, BlackRock and Fidelity.

D. Most Recent Additions

The company has been under contract with electricity providers in Jamaica since 2016 and Puerto Rico since 2019. It has operated a liquefaction asset in Miami since 2019. The company has been aggressively adding assets in Nicaragua, Brazil, Sri Lanka, Ireland, Pennsylvania and Mexico.

The company’s most recent acquisitions closed in Brazil. NFE acquired the Nanook, a new Floating Storage Regasification Unit (FSRU) docked at the Sergipe Facility. In addition, NFE acquired a fleet of six other FSUs, six LNG carriers and an interest in a floating liquefaction vessel (the Hilli). The majority of the fleet is in operation in Brazil, Kuwait, Indonesia, Jamaica and Jordan under contract arrangements.

In late December, NFE announced the signing of a memorandum of understanding (MoU) with Mauritania for delivery of natural gas from the company’s Fast LNG apparatus. The Fast LNG concept allows the company to bring ships into Mauritania’s coastal areas, dock next to liquefaction assets and then discharge LNG for processing.

II. NFE’s Financial Outlook

A. Financial Outlook

The company’s aggressive acquisition strategy added to its base of revenue-producing assets in 2021. Revenues from assets in Brazil, Nicaragua and Mexico are expected to rise appreciably and to fuel debt repayment and to finance additional capital construction in 2022. Although most of the company’s counterparties are in countries with BB or worse ratings, 2022 is expected to be a year with a relatively strong economic recovery that supports higher delivery volume and revenues for the company. Henry Hub futures are likely to take a dip but remain at somewhat elevated levels for most of 2022 and should allow the company to continue posting quarterly gains.

This will also be a pivotal year as NFE seeks to deliver on its development and operations initiatives. The company is seeking to capitalize on full-year operations

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26 Ibid.
27 Marketwatch. The S&P’s energy sector surged more than 50% last year – so how were green funds able to keep up with the stock market? January 18, 2022.
31 See Appendix for sources.
in Jamaica, Puerto Rico, Brazil and Mexico. It is launching significant construction initiatives in three additional sites in Brazil and one in Nicaragua. The company is expecting to achieve significant development benchmarks in Pennsylvania, Sri Lanka and Ireland.

1. Is the NFE Business Model Viable?

IEEFA estimates the company has pledged to complete 16 projects with an anticipated cash requirement of more than $3 billion by the end of 2023.

Table 2: NFE Pipeline of Projects Globally With Commercial Operation Dates No Later Than 2023\(^{32}\)

<table>
<thead>
<tr>
<th>Country</th>
<th>Location</th>
<th>Asset</th>
<th>Estimated Completion</th>
<th>Amount (USD Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>Wyalusing, PA</td>
<td>Liquefaction</td>
<td>1Q-2023</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>Gibbstown, NJ</td>
<td>Terminal</td>
<td>1Q-2023</td>
<td>95</td>
</tr>
<tr>
<td>Mexico</td>
<td>Port of Pichilingue</td>
<td>La Paz ISO Flex</td>
<td>1Q - 2022</td>
<td>132</td>
</tr>
<tr>
<td></td>
<td></td>
<td>100 MW Power Plant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicaragua</td>
<td></td>
<td>Offshore Liquefaction</td>
<td></td>
<td>700</td>
</tr>
<tr>
<td></td>
<td>Porto Sandino</td>
<td>OnShore Regasification</td>
<td>300 MW Power Plant</td>
<td>1Q-2022</td>
</tr>
<tr>
<td>Brazil</td>
<td>Santa Catarina</td>
<td>Offshore LNG Facility</td>
<td>2Q-2022</td>
<td>50</td>
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<tr>
<td></td>
<td>Baracarena</td>
<td>Onshore LNG Facility</td>
<td>1Q-2022</td>
<td>35</td>
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<tr>
<td></td>
<td>Baracarena</td>
<td>Power Plant</td>
<td>1Q-2022</td>
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<tr>
<td></td>
<td>Suape</td>
<td>Onshore LNG Facility</td>
<td>1Q-2022</td>
<td>536</td>
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<tr>
<td></td>
<td>Suape</td>
<td>1.4 GW Power Plant</td>
<td>1Q-2022</td>
<td></td>
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<tr>
<td>Ireland</td>
<td>Shannon</td>
<td>Onshore Regasification</td>
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<tr>
<td></td>
<td></td>
<td>Storage and Pipeline</td>
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<tr>
<td></td>
<td></td>
<td>CHP Power Plant</td>
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<tr>
<td>Sri Lanka</td>
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<td>Offshore Regas/Storage</td>
<td>1Q -2023</td>
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<tr>
<td></td>
<td></td>
<td>Total Estimated Cost</td>
<td></td>
<td>3214</td>
</tr>
</tbody>
</table>

In January 2021, the company identified approximately $2 billion to $3 billion in baseline potential resources to finance its construction ventures.\(^{33}\) The company identified a combination of cash, debt and equity—$600 million in cash, $300 million to $400 million in illustrative operating margins, $200 million in a cash revolver, and $1 billion to $2 billion in asset sales. During 2021, the company provided a series of financial presentations that updated cash on hand, illustrative

\(^{32}\) See Appendix for sources.

profit margins from future operations, revolver credit facilities and asset sales as the source of its development resources.\textsuperscript{34}

As noted above, the company’s operating revenues turned positive for the first time in the third quarter of 2021, posting a $19 million gain for the nine months ending September 2021.\textsuperscript{35} Revenues grew during 2021 but expenses also grew. The company’s projected illustrative operating rates of $300 million to $400 million had not been achieved through the third quarter.\textsuperscript{36}

The company’s debt burden increased to $3.8 billion in the third quarter of 2021.\textsuperscript{37} Debt levels increased to finance the Brazilian acquisitions and the fleet of chartered ships. The company’s projections that $1 billion to $2 billion is available through asset sales is not fully substantiated. The valuations remain largely unspecified and capacity utilization estimates are far below maximum capacity levels and market outliers (see utilization discussion on Miami and Jamaica below). In January 2021, Edens highlighted the attractive valuation of the company’s Jamaican assets as an example of a potential lucrative asset.\textsuperscript{38} The loss of NFE’s Jamaican equity partner later in the year is cause for concern.

The company has been slow to achieve its cash on hand and debt goals. At the end of the third quarter of 2021, cash on hand was $300 million, the revolver was $675 million, and debt grew substantially. The January 2021 projection anticipated $600 million in cash and a $200 million revolver.

At some point, adding projects and building new ones will need to be paid for with operational performance. As noted below, Puerto Rico, Jamaica and Miami are all relatively mature assets for NFE. Each facility posts weak delivery numbers relative to total capacity (see utilization discussions below). IEEFA’s research suggests that the growth potential, especially in Puerto Rico, is limited by the size of the economy and the demand for natural gas for power or industrial purposes.\textsuperscript{39}

Similarly, it remains to be seen whether NFE’s supply additions will be met with increased customer demand and increasing revenues at financially sustainable levels in Brazil, Sri Lanka, Nicaragua and Mexico.

At this point, the cost of NFE’s new project pipeline seems to far exceed even the company’s most optimistic estimates of $2 billion to $3 billion. Since the estimate was made in January 2021, cash has materialized at a lower level than anticipated,

\textsuperscript{34} Ibid. Also see: NFE. Q4 2020 Investor Presentation. March 2021. Also see: NFE. Annual Investor Update, July 2021. Also see: NFE. Investor Presentation. December 2021.
\textsuperscript{35} NFE. Form 10-Q. November 3, 2021.
\textsuperscript{36} NFE. Investor Update, January 21, 2021, p. 13.
\textsuperscript{37} NFE. Form 10-Q. November 3, 2021, pp. 28-29.
\textsuperscript{39} IEEFA. Sanzillo Testimony Puerto Rico Senate. January 2022. Attached to Testimony is a listing of numerous reports, testimonies and opinion pieces on the Puerto Rico economy, energy and operations of its power grid, budget condition and practices and planning assumptions.
short- and long-term company debt has mushroomed and although margins have turned positive, they remain far below the January 2021 projections.

B. Revenue

Figure 1: NFE Revenues 2016 Through Q3 2021

NFE’s principal revenue sources are derived from buying, selling and delivering natural gas. Through the third quarter of 2021, the company’s principal operating revenues came from its contracts in Old Harbour, Jamaica ($191 million), Puerto Rico ($176 million) and Montego Bay, Jamaica, ($79 million).

The company also received $143 million in vessel charter revenue and $149 million in other revenue. Vessel charter income is derived from profits received from ship, equipment and lease transactions and various lease arrangements. The vessel charter revenue flowed from the two recent acquisitions in Brazil.

The company also benefited from related payments received from the profits from sales of equipment and leases, construction, installation and commissioning of

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40 Revenue consists of three categories: Operating Revenue that includes revenue from the sale of natural gas as well as outputs from natural gas power facilities. Other Revenue includes revenues from development services as well as interest on leases. Vessel Charter Revenue is derived from certain use rights the company has obtained under its merger agreement for the FSRU and LNG carriers. Revenues derived under these use agreements and for repositioning its fleet are carried under Vessel Charter Revenue. See: NFE. Form 10-Q. November 3, 2021.


42 Ibid., pp. 7-8, 61.
infrastructure, including natural gas plants and financing arrangements related to
the development process.\textsuperscript{43}

**Figure 2: NFE Revenue by Geography, Through Q3 2021**

Through the third quarter of 2021, revenue from Jamaica (40%) drove the
company’s $676 million total, followed by Puerto Rico (26%). Jamaica was added in
2016 and Puerto Rico in 2020. Brazil, which was added in 2021, accounted for 25%
even though it was counted on NFE’s balance sheet for fewer than three quarters.

**Figure 3: 2022 Fitch Revenue Estimates**

Fitch Ratings Service has provided an estimate of the company’s revenue outlook for
2022. Based on NFE’s rapid acquisition strategy and a full year calculation for Brazil,
the company’s revenue base is expected to grow and add Mexico and Nicaragua to

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\textsuperscript{43} Ibid., p. 6.
its Puerto Rico and Jamaica base operations. As the revenue base has diversified, credit agencies have noted the change positively.

**C. Cost of Sales**

**Figure 4: Cost of Sales**

The company accounts for its operating expenses by segmenting cost of sales, vessel operating expenses, operations and maintenance, selling and administrative, transaction and integration costs, depreciation and transaction costs. Through the third quarter of 2021, operating expenses totaled $655.6 million.

Cost of sales included procuring feedgas and LNG; logistics and shipping to customers; third party transactions; and sales to the Miami facility for fuel preparation. The cost of sales through the third quarter of 2021 were $333.5 million (Figure 4).

The increased cost of sales trend in 2021 reflects rising volumes in Puerto Rico, along with an increase in natural gas prices that increased expenses in Puerto Rico; Old Harbour, Jamaica; and Montego Bay, Jamaica.

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D. Gains and Losses

Figure 5: Operating Loss/Gain, 2016 Through Q3 2021

The company has experienced operational losses from 2016 through 2020. Through the third quarter of 2021, the company’s operating profile turned positive. In 2021, total revenues increased by $220 million over 2020 receipts, and expenses increased by $55 million. For the first three quarters of 2021, NFE posted an operating gain of $19 million.

Figure 6: NFE Long-Term Debt 2016 Through Q3 2021
Through the third quarter of 2021, total long-term debt for NFE increased to $3.8 billion, up from $80 million in 2016. The new long-term indebtedness has been used to support acquisitions. NFE has also assumed other indebtedness (credit facilities and loans) connected to its acquisition of various parts of its fleet.  

Through the third quarter of 2021, NFE’s interest payments rose to $107 million, up from full-year payments of $65.7 million.

NFE acknowledges that it may take a considerable period of time before it can declare profits. The build-out of natural gas infrastructure takes time for development to occur and then for markets to firm up. The 2021 revenue increase reflects rising gas prices, the addition of an existing facility acquired through a transaction and some volume increase from its customers.

Revenue needs to grow robustly over the next several years to handle rising operations expenses, cash needs for development, payment of existing debt and stabilization of payouts to investors. The company is at risk of becoming too reliant on debt. Declining stock values suggest that investors will have little appetite for further erosion of stock value through more issuances. And, while controlling parties have considerable resources, it would appear there are limits. Without strong cash performance, the model does not work.

There are also factors that do not appear on the balance sheet that have a significant impact. There is little room for error in NFE’s development plans. Project execution will need to be on time and on budget. Surprises like the recent withdrawal of equity support from NFE’s power plant deal in Jamaica will cost the company in future debt payments.

III. NFE Project Descriptions: Existing Facilities, Proposed Projects, Performance and Risks

A. Overview

NFE has amassed 16 projects in its pipeline across a wide variety of countries. The project completion dates suggest a very aggressive construction schedule through 2023. Section II addressed the current financial position of the company and its ability to take on the financial commitments that come with the new investments. This section of the paper addresses NFE’s actual performance in its existing portfolio, its strategic acquisitions and the local issues facing host states and nations, and critical risk factors for the company.

The company plans to assist host nations and communities to grow their natural gas resources. Most countries with natural gas aspirations seek to integrate this energy

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46 Moody’s has issued supportive statements regarding the company’s plans and execution to date. It has also warned that adding layers of debt and organizational complexity overtime may place downward pressure on future rate assessments. See: Moody’s. New Fortress Energy – Credit Opinion. December 6, 2021. (Proprietary)

47 Except as otherwise noted information on project facility description, capacity, commitment and status are taken from New Fortress Energy. See: NFE. Form 10-K. March 26, 2021.
choice with broader economic development goals. NFE’s presence increases competition among local energy stakeholders and is often consistent with those economic development plans. Upon examination of NFE’s strategic plans, IEEFA has concluded that the company’s plans threaten the development of renewable energy, impedes actions to meet climate goals and undermines economic development goals by integrating natural gas and its attendant inflationary pressures into the country’s grid system and economy.

Warnings regarding the negative financial, environmental and regulatory consequences of overbuilding natural gas resources have been issued in Puerto Rico, Mexico, Sri Lanka, Ireland and the United States (see discussions below). The exposure to increasing amounts of natural gas brings inflation, volatile pricing and the high likelihood of stranded assets with its attendant negative impacts on investment and banking performance. These undesirable economic outcomes are likely to undermine economic growth.48

Furthermore, the company’s claims that it is often replacing heavy polluting oil and diesel fuel resources with lower-emitting natural gas present a false choice, since growth in renewable energy and other green investments now provide cheaper, more efficient, cleaner alternatives that improve economic outlooks.49

The company acknowledges the highly speculative nature of its business, execution risks and the countries where it is doing business.50 With the exception of the United States and Ireland—where political opposition is the strongest—most of NFE’s plans will depend on uncertain economic growth in emerging markets. Some host governments are unstable politically and financially.

Local opposition in Pennsylvania, New Jersey, Ireland and Puerto Rico has developed and identified significant public health and safety risks related to water management, environmental contamination and transport safety. In the United States, this combination of regulatory risks has scuttled many natural gas infrastructure projects.51

These concerns about NFE’s potential in host countries are heightened when the company’s track record (discussed in the next section) in places where it has finished construction and currently operating facilities is examined. Actual deliveries fall far below current capacity level where the company has built facilities and now has them up and running under contract, including Miami; Old Harbour, Jamaica; Montego Bay, Jamaica; and Puerto Rico. In Miami and Montego Bay, where NFE has had the longest operational presence, the robust customer base that would grow deliverable volumes has been slow to materialize. And in Puerto Rico, where

49 IEEFA follows the development of renewable energy and other emerging green technologies. The potential that NFE’s investments will result in stranded assets is high. The company’s claims that its business mode is operational in tune with climate change goals strains credulity. See: IEEFA. IEEFA Update: Financing the future of green energy. January 24, 2022.
50 See S-1 Risk analysis. The same risk analysis appears in each of NFE’s quarterly and annual SEC filings.
the company’s utilization numbers barely exceeded their deliveries to PREPA, the company may have overbuilt its terminal capacity and failed to deliver on its promise to save hundreds of millions of dollars for a bankrupt public authority.

B. Poor Performance at Existing Facilities

1. Miami: Liquefaction Asset With Weak Performance and Fledgling Customer Base

The company owns a liquefaction facility in Miami that was commissioned in 2015 and has been in operation since 2016. The facility can process 100,000 gallons per day and consists of one liquefaction train, three storage tanks, and rail and truck delivery transfer capacity. Rail deliveries are made over Florida East Coast Railways. The plant supports its customer base in South Florida and the Caribbean. The Miami facility is authorized under U.S. Department of Energy permits to supply LNG to both Free Trade Agreement (FTA) and non-FTA countries.

Table 3 shows NFE has reported that over the life of the facility, it has averaged between 28,000 and 35,000 gallons per day. In 2020, the company delivered 35,000 gallons per day to customers. NFE did not report revenue or volume performance results for the Miami facility through the third quarter of 2021.

Although the Miami facility appears to be an integral component of NFE’s supply network, the company does not account for any revenue from the facility in the company’s annual report or recent financial filings.

Table 3: Miami Liquefaction Facility Capacity vs. Actual Deliveries 2016-2020

<table>
<thead>
<tr>
<th>Year</th>
<th>Capacity GPD</th>
<th>Actual GPD Delivered</th>
<th>Actual Deliveries by Percent of Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>100,000</td>
<td>4,384</td>
<td>4%</td>
</tr>
<tr>
<td>2017</td>
<td>100,000</td>
<td>22,740</td>
<td>23%</td>
</tr>
<tr>
<td>2018</td>
<td>100,000</td>
<td>28,000</td>
<td>28%</td>
</tr>
<tr>
<td>2019</td>
<td>100,000</td>
<td>31,000</td>
<td>31%</td>
</tr>
<tr>
<td>2020</td>
<td>100,000</td>
<td>35,000</td>
<td>35%</td>
</tr>
</tbody>
</table>

54 Florida East Coast Railway is currently owned by Grupo Mexico.
56 NFE. Form 10-K. March 26, 2019, p. 8.
57 NFE. Form 10-K. March 26, 2019, p. 5.
58 A review of 1Q, 2Q and 3Q for 2021 provided no specific revenue reporting. Each report provides unspecified costs of sales references.
Based on IEEFA’s research, the Miami facility is the smallest liquefaction asset in the United States. The inability of the Miami plant to muster more than 35% capacity in any year over the last five years suggests that the business model misread the market demand for natural gas produced by the facility. Additional analysis is required to determine whether the location, costs of production, customer base, staff capacity or other factors are driving poor performance. The International Gas Union annual report on LNG puts average liquefaction capacity utilization in the United States at 76.5% during 2020 and 96% in 2019, the year prior to the pandemic. The average plant in the United States is 30 times the size of the Miami plant.

NFE is planning to develop a network of liquefaction facilities to service its customer base. This is supposed to minimize price fluctuations from regional market volatility. The business plan was to build five to ten facilities by 2024. The Miami plant is the only one that has been brought from announcement to commercial operation. The other plant slated for Pennsylvania (see below) is stalled.

2. Jamaica

Jamaica’s gross domestic product is $13 billion; the country has a B2 stable credit rating. Its integrated resource plan (IRP) supports more investment in renewable energy. The goal is to increase renewable energy to 30% of the generation mix by 2040. In the medium term, the plan expands the use of liquefied natural gas and expansion of natural gas power plants, some to be owned by New Fortress. New Fortress has bought into two terminals (Montego Bay and Old Harbour) and taken ownership of a power plant, with plans for more. The company’s sizable investment in Jamaica is accompanied by NFE’s risk analysis that makes clear its long-term commitments are for minimum volumes and that the company’s revenue expectations rest on substantially higher sales projections.

While the Jamaica IRP anticipates steady stable natural gas pricing, the history of the commodity shows significant periods of volatility. The IRP notes that renewable energy offers reliable cost savings. Jamaica’s energy choices make it particularly susceptible to natural gas price risk. As natural gas prices have risen globally, Jamaica’s utility has issued a warning to its consumers of significant electricity price increases. Fossil fuel price increases at the pump and on the grid are contributing to inflationary pressures in the country, especially in the agricultural sector. One local elected official has linked the current price spikes to

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65 Jamaica Gleaner. JPS warns customers about higher electricity bills due to rising fuel costs. December 15, 2021.
the policy choice made by the government to accelerate the nation’s dependence on natural gas generally, and NFE has been mentioned specifically in that context.\textsuperscript{67}

To date, NFE’s delivery operations in Jamaica have fallen far short of the capacity base they have developed.

The Montego Bay facility in operation since 2016 has a capacity of 740,00 gallons of LNG per day and 7,000 cubic meters of onsite storage. The primary customer is Jamaica Public Service Company. The excess capacity beyond the contracted amounts is designed to serve industrial end users as NFE grows.\textsuperscript{68}

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|c|}
\hline
\textbf{Montego Bay} & \textbf{Capacity GPD} & \textbf{Actual GPD Delivered} & \textbf{Actual Deliveries by Percent of Capacity} \\
\hline
2017 & 740,000 & 236,438 & 32\% \\
2018 & 740,000 & 271,781 & 37\% \\
2019 & 740,000 & 302,740 & 41\% \\
2020 & 740,000 & 258,082 & 35\% \\
2021 & 740,000 & 266,176 & 36\% \\
\hline
\end{tabular}
\caption{Montego Bay Facility Capacity vs. Actual, 2017 Through 2021} \textsuperscript{69}
\end{table}

According to NFE’s annual filings, the Montego Bay facility is NFE’s most mature terminal. The facility has a considerable amount of underused capacity each year. With an annual utilization rate of 36\%, the Montego Bay Facility has been slowly absorbed into the Jamaica economy. Neither new power plant capacity nor increased demands from industrial customers have created a growing customer base.

The Old Harbour facility commenced operations in 2019 with two principal customers, South Jamaica Power Company (JSC) and Jamalco.\textsuperscript{70} Old Harbour is an offshore facility with storage and regasification equipment supported by an FSRU. With a capacity of 6 million gallons per day, the facility serves power plants and industrial users.\textsuperscript{71}

\begin{flushright}
\textsuperscript{67} Jamaica Observer. \textit{Why is my light bill so high?} September 12, 2021.
\textsuperscript{68} See: NFE. \textit{Form 10-K}. March 26, 2019, pp. 52-53.
\textsuperscript{69} NFE. \textit{Form 10-K}. March 4, 2020, p. 51. Also see: NFE. \textit{Form 10-K}. March 26, 2021, p. 69. Also see: NFE. \textit{Business Update}. March 18, 2019.
\textsuperscript{70} NFE. Our liquefied natural gas (LNG) facilities are supplying positive energy around the world. Accessed January 20, 2022.
\end{flushright}
Table 5: Old Harbour Facility GPD Capacity Versus Actual GPD Delivered 2019-2021

<table>
<thead>
<tr>
<th></th>
<th>Capacity GPD</th>
<th>Actual GPD Delivered</th>
<th>Actual Deliveries by Percent of Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>6,000,000</td>
<td>60,822</td>
<td>1%</td>
</tr>
<tr>
<td>2020</td>
<td>6,000,000</td>
<td>526,027</td>
<td>9%</td>
</tr>
<tr>
<td>2021</td>
<td>6,000,000</td>
<td>632,353</td>
<td>10%</td>
</tr>
</tbody>
</table>

Old Harbour has a limited operating record. Its best year yet was 2021. Table 5 shows only nine months of activity for the year, and the actual deliveries achieved 10% of capacity. Like the Montego Bay facility, the economy seems to be slow to absorb this existing capacity.

NFE’s investment in Jamaica has also included a foray into the ownership and operation of power generation units. The company built a 150-megawatt (MW) combined heat and power plant (CHP) fueled by natural gas at Clarendon, Jamaica. The facility commenced construction in 2017 and opened for commercial operation in 2020. According to published reports, the plant had a planned cost of $265 million to build. The Clarendon Plant is supported by a long-term power purchase agreement (PPA) with the Jamaica Public Service Company, the sole utility on the island. NFE also has an agreement with a bauxite and alumina mining interest, a subsidiary of the Noble Group.

According to NFE’s third-quarter statement in 2021, Old Harbour Terminal provided deliveries to Clarendon and the bauxite contracts of 81.3 million gallons per day.

In June 2021, NFE announced that Sagicor, a Jamaica-based financial services company, had agreed to take an equity position of $100 million and to structure investments of another $185 million on a sale and leaseback arrangement from local, regional and international investors. NFE said the proceeds from the CHP financing would be used to close out the development costs of the plant’s construction and then would use the company’s enhanced credit position to finance the broader global agenda of the company.

When details of the final deal emerged in January 2021, Sagicor announced that it held $100 million in NFE bonds and did not proceed with the equity infusion as originally planned, citing changing market conditions. Sagicor remained the underwriter for the remaining investors, but the terms of the $185 million and the

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76 NFE. Form 10-Q. November 3, 2021.
sources of any commitments were unknown. It appears that Jamaican banking regulatory approvals remained in place for the transaction to proceed.\textsuperscript{78}

NFE must now accept Sagicor’s participation, if any, as a lender and not as an equity partner. This is a $100 million debt burden that remains on NFE’s balance sheet. As the company proceeds with its other projects, more disclosures to investors should explain whether the pullout of Sagicor was region- or deal-specific and/or related to the growing concerns over fossil fuels and climate change.

3. Puerto Rico: NFE’s Natural Gas Project Crowds Out Cheaper Renewables and Safer Grid Alternatives

On March 5, 2019, NF Energia LLC (NFE), a Puerto Rico limited liability company (and subsidiary of New Fortress Energy), entered into an agreement with the Puerto Rico Electric Power Authority (PREPA), the Commonwealth of Puerto Rico’s public authority with responsibility for the Island’s electricity system.\textsuperscript{79} The purpose of the agreement was to retain NFE to upgrade PREPA’s San Juan 5 and 6, a 440MW diesel-powered generation plant to burn natural gas as the primary energy source for the plant. Upon completion of the upgrade, the contract also called for NFE to deliver natural gas to the power plants. The company’s terminal has a capacity of 2.7 million gallons per day.\textsuperscript{80}

PREPA claimed it would generate significant fuel savings by replacing diesel fuel with cheaper natural gas. This would provide a structural cost improvement as the authority developed a sustainable post-bankruptcy plan.\textsuperscript{81} PREPA’s plan also called for more renewable energy investment with a similar aim of reducing fuel costs. The two processes would reduce emissions, support grid modernization and save money. NFE’s PREPA contract would build on its micro-handling facility designed to serve the island’s industrial users of natural gas.

The contract is part of a series of agreements entered into by PREPA and other commonwealth agencies to privatize the public authority. The NFE transaction was the first privatization contract for PREPA. It is to be followed by a series of other agreements for the management of the transmission and distribution system and generation.\textsuperscript{82} PREPA has been in bankruptcy since 2014 and is supervised by a federal Financial Oversight and Management Board (FOMB).

NFE was awarded a contract to convert a diesel-burning power station to natural gas and then deliver fuel to the newly upgraded generation plant for the next 20 years. Community residents opposed the project because it was inconsistent with

\textsuperscript{78} Ibid.
\textsuperscript{79} NFE/PREPA. Fuel Sale and Purchase Agreement. March 5, 2019.
\textsuperscript{80} NFE. Operational Facilities - San Juan. Accessed January 24, 2022.
\textsuperscript{81} IEEFA. IEEFA: Puerto Rico utility PREPA gave unfair advantage to NFE in awarding 1.5 billion power plant contract. June 10, 2020.
\textsuperscript{82} IEEFA. Puerto Rico Grid Privatization Flaws Highlighted in First Two Months of Operation. August 2021.
the commonwealth’s statutory goal to increase the amount of renewable energy on the island.

On March 3, 2021, a coalition of environmental organizations filed an opposition brief to PREPA’s motion seeking approval by the Puerto Rico Energy Board (PREB) of its 10-year infrastructure plan. The brief noted that the law in Puerto Rico called for an energy system served by 100% renewable energy by 2050. It noted that the legally binding IRP approved by the PREB supported a series of renewable energy projects. The brief detailed a multi-year attack on the renewable energy goal by PREPA. The opposition document also specified that recent submissions by PREPA to the government for federal funding to rebuild the grid did not include any projects to fund renewable energy. The opposition document identified a series of planned natural gas plants that would substitute for the renewable energy projects.

A plan to achieve 100% renewable energy was not only the least-cost option for the energy system, it was also an integral part of PREPA and the commonwealth’s plan to emerge from bankruptcy. An increase in renewable energy was a part of the plan to rein in annual costs by reducing PREPA’s reliance on expensive, unreliable and volatile diesel oil prices. The reduction in operating costs was designed to keep electricity prices affordable for residents and businesses, and served as a key component of Puerto Rico’s balanced budget and economic recovery plan.

NFE benefited from a tainted procurement process in Puerto Rico. A review of the contract process conducted by IEEFA and CAMBIO demonstrated that NFE had an unfair advantage against its competitors. Company representatives met repeatedly with PREPA officials during the bidding process.

The company promised to save PREPA millions of dollars from the arrangement. The construction project was completed during the 2021 fiscal year. So far, however, there has been no public report that identifies the amount of savings actually delivered. Research conducted by IEEFA found that NFE’s contract with PREPA contained no contractual obligations that required the company to deliver the actual savings that were promised in the company’s bid submission. There is a

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84 Ibid., p. 4, 15.
88 A review of the 2021 Certified Fiscal Plan does not provide any specific accounting of savings achieved under the New Fortress Energy contract. In a Motion to Leave to Answer (November 4, 2021) CP-21–496 000, NFE states that one of its customers projects savings of $500 million over the next five years. NFE sources this savings estimate to PREPA’s FY 2019 Certified Fiscal Plan. The FY 2020 FY Certified Plan identifies a maximum savings over five years of $280 million and the FY 2021 Certified Plan no longer provides any specified actual or planned savings from the New Fortress conversion. See: Ibid., pp. 81–82. Also see: FOMB. 2020 Fiscal Plan for the Puerto Rico Electric Power Authority. June 29, 2020.
history of conflicting savings claims and of requests by the FOMB to PREPA to detail any actual savings.\textsuperscript{90}

Through the third quarter of 2021, NFE delivered 165.9 million gallons of LNG—an average of 609,000 gallons per day, or 23\% of actual capacity.\textsuperscript{91}

At the end of 2021, PREB passed along a 16.8\% rate increase to customers, citing rising fuel oil and natural gas prices.\textsuperscript{92} Further, the FY 2021 certified fiscal plan states that PREPA remains exposed to fossil fuel price volatility.\textsuperscript{93}

In its initial application, NFE asserted that the U.S. Federal Energy Regulatory Commission (FERC) did not have jurisdiction over the facility. In June 2020, FERC ordered NFE to show cause why the agency did not have jurisdiction. In March 2021, the commission issued a final order asserting jurisdiction and directing the company to apply for approval of the San Juan project as an LNG-handling facility.\textsuperscript{94} NFE is allowed to continue making deliveries pending the outcome of the jurisdictional dispute. NFE is appealing the FERC final order.

In May 2020, New Fortress Energy disclosed it was on the short list in Puerto Rico for the production of 500 MW of additional temporary energy.\textsuperscript{95} The project was subsequently withdrawn. The company continues to discuss future power plant development as a component of its Puerto Rico growth strategy,\textsuperscript{96} and it remains on the short-list as a potential operator for some or all of PREPA’s existing power plants under the government’s current privatization strategy, which could include converting additional units to natural gas.\textsuperscript{97}

NFE secured its contract in Puerto Rico under questionable circumstances. The delivery of the project was late, and the company apparently attempted to avoid FERC’s regulatory oversight. The company has not delivered on its promised budget savings. Recent decisions by the island’s regulator to grant rate increases to cover rising natural gas prices are making electricity unaffordable for more people and businesses on the island. As a policy matter, NFE’s San Juan project encourages greater reliance on natural gas utilization in Puerto Rico, even though the applicable law and policy call for a 100\% move to renewable energy.

\textbf{C. Pipeline of New Projects and Critical Risk Factors}

As shown in Table 2, NFE has at least 16 new facilities planned in locations that span the globe. The new proposed natural gas facilities pose financial and economic risks for the company and most of the host communities and nations. Increased reliance

\begin{itemize}
  \item \textsuperscript{90} IEEFA. \textit{Paying for Failure in Puerto Rico}. April 2021.
  \item \textsuperscript{91} NFE. \textit{Form 10-Q}. November 3, 2021, p. 46.
  \item \textsuperscript{92} Amico Hoops. \textit{Energy Bureau Approves 16.8 Increase in Electricity Bill}. December 31, 2021.
  \item \textsuperscript{93} FOMB. \textit{2021 Fiscal Plan for the Puerto Rico Electric Power Authority}. May 27, 2021, p. 21.
  \item \textsuperscript{94} Federal Energy Regulatory Commission. \textit{Order on Show Cause}. March 19, 2021.
  \item \textsuperscript{95} Newsismybusiness.com, \textit{New Fortress Energy short-listed for PREPA temporary power generation}, May 7, 2020.
  \item \textsuperscript{96} NFE. \textit{Annual Investor Update}. July 2021.
  \item \textsuperscript{97} El Nuevo Dia. \textit{En carrera ocho firmas para operar las plantas de la AEE}. November 23, 2020.
\end{itemize}
on natural gas for most of the economies exposes them to rising prices and volatility. The diseconomies are clear in some places.

In each country, the company is subject to a series of environmental and climate objections. Public opposition to fossil fuel infrastructure has become a factor that has resulted in project cancellations based on political and regulatory considerations.\textsuperscript{98} Many companies are not accurately assessing the changing nature of the markets and how public opposition drives regulators, elected officials and financial decisionmakers to reject projects.\textsuperscript{99}

It is uncertain which of the facilities will move forward. Given the company’s mixed track record, growing issues related to debt management and growing risks related to LNG infrastructure, projects need to be viewed with caution. Finally, many of the host nations face uncertain economic, financial and political futures.

1. Pennsylvania: Planning, Opposition, Regulatory Hurdles

Basic Description: Procedural and Regulatory Landscape

NFE is exploring the construction of a 4 million gallon-per-day liquefaction facility in Wyalusing Township, Penn.\textsuperscript{100} The facility would receive natural gas from pipelines connected to local fields in the Marcellus region, process natural gas to meet commercial needs and load the LNG for distribution by truck and rail.\textsuperscript{101} The natural gas would be offloaded to ships at the Gibbstown, N.J., terminal. LNG would then be shipped to foreign and domestic NFE customers.

Through 2020, NFE’s affiliate has invested $159 million for land acquisition and pre-development costs.\textsuperscript{102} In 2019, the company said it had signed an Engineering, Procurement and Construction (EPC) agreement for $672 million and anticipated the plant would be operational by the first quarter of 2021.\textsuperscript{103} To date, the company has not proceeded to Final Investment Decision (FID), citing community opposition, pandemic and supply chain-related matters.\textsuperscript{104} No major construction efforts have been mobilized in either the Pennsylvania site or the Gibbstown terminal.\textsuperscript{105}

\textsuperscript{99} IEEFA. IEEFA Response to the U.S. Chamber of Commerce Analysis of the “Keep it in the Ground” Movement, February 2019.
\textsuperscript{100} New Jersey Department of Environmental Protection. Minor Source Plan Approval Application – Bradford County Real Estate Partners. December 18, 2018, p. 1. Bradford County Real Estate Partners is an affiliate of New Fortress Energy.
\textsuperscript{101} Ibid., p. 1-1.
\textsuperscript{102} NFE. Form 10-K. March 4, 2020.
\textsuperscript{103} NFE. NFE Business Update. March 18, 2019, p. 6. Also see: NFE. Form S-1. November 9, 2018, p. 79.
\textsuperscript{105} DRN. PHMSA Special Permit DOT-SP 20534 for LNG Transport by Rail Car. December 10, 2021, p. 5.
The Pennsylvania facility would be the company's second liquefaction asset. It is part of the company's broader plan to meet its strategic goal of building infrastructure to support customer needs and reduce risks to the natural gas trading market. In December 2019, NFE received a special permit from the Pipeline Hazardous Material Safety Administration (PHMSA) to transport LNG from the facility via rail to Gibbstown. The Special Permit expired on November 30, 2021. NFE filed an extension request on November 29, 2021 to maintain its rights under the permit.

PHMSA states it is evaluating the application according to 49 CFR 107.113(a). In addition, the company must receive approval from a host of agencies in order to proceed with the project.

NFE’s various permit requests are being challenged at the federal, regional, state and local level:

- The Army Corps of Engineers is being challenged for granting permission to demolish and construct docks needed to transport the LNG from Pennsylvania to the Gibbstown terminal. The challenge is based on the failure of the Corps to conduct proper environmental evaluations, attend to transport safety issues and properly regulate air emissions.

- FERC must decide whether to exempt the port from its jurisdiction. Two NFE subsidiaries have applied for exemptions for the liquefaction and shipping project at Wyalusing and at the Gibbstown Logistical Center.

- At the regional level, the decision by the Delaware River Basin Commission to permit dredging to occur is being challenged.

- At the state level, permit proceedings at the New Jersey Department of Environmental Protection are being challenged. Environmental organizations have provided the department with additional information.

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114 Ibid.
115 Ibid.
that the project is likely to release toxic polychlorinated biphenyls (PCBs). The permit appeal DRN v. NJDEP was lost in Superior Court and a Petition to the New Jersey Supreme Court was denied in January 2022.

- At the community level, citizens have organized in Pennsylvania and New Jersey to support local ordinances restricting rail or truck traffic; thousands of petitions have been submitted to agencies from potentially impacted residents.

NFE is requesting a waiver of FERC’s jurisdiction of the project. Two separate regulatory proceedings would be necessary—one for the Wyalusing facility and one for the Gibbstown terminal. NFE contends that FERC has no jurisdiction because the project does not use a pipeline, which would place the project clearly within FERC’s authority. NFE argues it will transport gas by truck and rail, and so does not fall within FERC jurisdiction.

The scope of public regulation divides and parcels the health risk into a confusing morass. NFE’s project as a whole crosses state and county lines and creates the risk of catastrophic events. The public regulatory process has a rationale, but it is a rationale that is far removed from the community concerns and public health risk.

A further broad, substantive policy objection is that the LNG-to-rail plan is contrary to the Biden administration’s pledge to curb methane emissions. The administration has called a halt to LNG to rail projects.

Federal health, safety and environmental regulatory issues reflect local and state government concerns regarding these risks. The various environmental and health and safety regulations fall within a patchwork of federal agencies and laws. Community and environmental concerns in Pennsylvania and New Jersey stress the need for decisions to be made in a coordinated manner.

The lack of coordination means the project requires a host of permits to move forward. The permit requests are being met with opposition from a growing coalition of organizations throughout the communities that are expected to host various parts of the New Fortress Energy development plans. The coalition is comprised of local community and environmental organizations, state and regional organizations, scientists, and other professionals who are raising substantive environmental concerns, as well as specific governance issues related to permit processes.

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117 DRN to NJ Department of Environmental Protection (NJDEP), Petition to Require Delaware River Partners, LLC to Apply for Individual NJDPES Permits Implementing the TMDL for PCBs in Zone 4 of the Tidal Delaware River Permits NJG0263541, NJG0304042 & NJG0299201, December 8, 2020.
118 For a comprehensive discussion of the regulatory issues involved, see: American Bar Association. FERC Pipeline Siting Program Deals with Legal Challenge. Natural Resources and Environment, Spring 2016.
119 Natural Gas Intelligence, Biden Administration Suspends LNG Rail, November 11, 2021.
120 Ibid.
121 DRN, op. cit. Also see: Food and Water Watch. Fracking Nightmare. August 2021.


Substantive Planning, Environmental and Economic Development Issues

Risk of Explosions During Transport

A significant level of concern stems from the plan to ship LNG from the Wydarising site by rail or truck to the terminal in Gibbstown. LNG is a volatile gas that has caused major explosions and damage in other communities. Communities along the rail or truck route will be at considerable risk. The U.S. Department of Transportation has proposed to suspend the LNG-by-rail program, recognizing a series of unresolved safety concerns that include explosions and leakage. The lack of any federal program and the rules and procedures it would provide undermines the policy basis upon which the Pennsylvania Department of Environmental Protection is acting, according to organizations opposed to the project. For example, NFE proposed transporting LNG in older tank cars that would be out of compliance with proposed federal rules.

FERC: Need, Health and Climate Issues

The FERC oversight dispute concerns the regulation of the liquefaction facility in Wydalising and natural gas terminals in Gibbstown, New Jersey that are not connected to pipelines. NFE has applied for exemption from FERC oversight. Opponents of the project have raised several substantive and procedural points including: 1) the high risk of an accident during rail and/or truck traffic between the Wydarising facility and Gibbstown port; 2) the emissions contributing to climate change; and 3) FERC’s obligations under the Natural Gas Act to regulate the construction of facilities and transport of natural gas in the United States for both domestic and foreign markets. NFE’s applications for the Wydarising and Gibbstown segments of the project are separate under current rules, despite the project being an integrated downstream LNG initiative that requires cross-state coordination and international shipping logistics.

Community-Based Land, Water, Air and Historic Preservation Issues

Community and local government opposition to the plant, rail and truck routes and terminal construction and use is extensive. Dozens of elected local councils in

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126 Letter signed by 97 organizations to Governor Murphy outlining problems and steps to solve the outstanding issues. January 8, 2021. (Proprietary)
Pennsylvania, New Jersey and Delaware have passed resolutions opposing the project. Fifteen New Jersey communities have passed resolutions directed to Governor Phil Murphy, calling on him to reject permits for the Gibbstown terminal component of NFE’s plan or to other agencies such as PHMSA advocating that the Special Permit be stopped and the national ban on LNG by rail be reinstated through federal rulemaking. Thousands of petitions opposing the terminal and/or the railcar transport of LNG have been submitted to agencies. The resolutions cite unsafe conditions and also call upon the Army Corps of Engineers to conduct a review of the project.\footnote{Food and Water Watch. \textit{Trenton Votes to Opposed Gibbstown Fracked Gas}. December 6, 2021.}

Ten local governments in Pennsylvania have also passed resolutions opposing the project.\footnote{Protect Northern PA. \textit{The Long and Winding Route}. January 2021.}

In addition to the climate, environmental and jurisdictional matters being raised, Pennsylvania residents and historic preservationists object to the liquefaction facility and potential pipeline sites at a former village that supported the Moravian Native American tribe and contend the development would desecrate land and culture.\footnote{Pennsylvania Department of Environmental Protection. \textit{Bradford County Real Estate Partners, Comment Document}. Undated.}

Opposition has also been voiced from elected officials and residents of Philadelphia\footnote{Philadelphia Inquirer. \textit{Plan to send LNG trains through Philly to S. Jersey port sparks outrage from residents, environmentalists}. September 20, 2020.} and Allentown\footnote{DRN. \textit{Delaware Riverkeeper Network Liquified Natural Gas Rail Transport Community Impacts}. November 12, 2021.} based on public health and safety, environmental and climate concerns. Twenty-five states and local elected officials from Philadelphia and surrounding communities voiced opposition to the project at the Delaware River Commission.\footnote{DRN. Joint Letter Twenty Five State and Local elected Officials to Delaware River Basin Commission Re: Opposition to the New Fortress Project. December 4, 2020.}

The Gibbstown terminal opposition is also based on the plans to develop a port, dredge 45 acres of sensitive river bottom that would harm federally endangered species, and add new roads, underground storage capacity, warehouses and rail infrastructure that would affect the Delaware River.\footnote{DRN. \textit{Factsheet: Gibbstown Logistics Center Plans to Export Liquefied Natural Gas (LNG)}. Visited February 20, 2022.}

**Corporate Citizenship and Governance Issues**

NFE’s approach to community and regulatory relations has harmed the company’s credibility. From the outset, the company sought special permits that avoided research and studies that would protect public health and the environment.\footnote{DRN. \textit{Letter to President Biden Re: PHMSA Special Permit DOT-SP 20534 for LNG Transport by Rail Car}. August 1, 2021.} The special permit, for example, provided approval of substandard tank cars to...
transport natural gas. Community residents also point out that the company has not met critical development and construction deadlines after being granted the special permit. The groups also argued that the original permit didn’t protect public health and safety.

2. Mexico

Mexico’s relatively strong and diversified economy boasts a GDP of $1.5 trillion. The country, however, has a Baa1 negative credit rating from Moody’s, based in part on subsidies to the state-owned fossil fuel company Petroleos Mexicanos (Pemex). The nation’s electricity system is also facing warnings that its overreliance on natural gas and failure to adopt clear renewable energy policies puts utility finances at risk. Comisión Federal de Electricidad (CFE) is rated Baa1/Aaa negative. The negative outlook is driven in large part by the expectation of rising debt levels to pay for expansion plans, high exposure to natural gas markets due to increased imports and reliability concerns. Of special concern is the potential for further downgrades of the Mexican government, the key financial backer of CFE.

NFE’s La Paz Facility is planned as an ISOFlex receiving station and 100MW natural gas power plant located at the Port of Pichillingue in Baja California. The facility will be capable of supplying 1.8 million gallons per day. The receiving station is expected to take LNG from an offshore supply vehicle and supply power plants being developed by NFE, as well as industrial customers and hotels. NFE announced in July 2021 that the terminal has begun delivering natural gas supplies to two power plants. The facility has contracted for 29% of capacity from unspecified sources. There have been no actual volume or revenue filings by the company because the facility has only recently opened.

In October, Mexican President Manuel López Obrador submitted legislation to reform the electricity system in Mexico, including calls for the elimination of the country’s regulator. The president has staked his administration on several major infrastructure projects, including natural gas expansion. According to Moody’s, the plan would increase the nation’s reliance on natural gas. Several new natural gas

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139 Moody’s, Government of Mexico – Baa1 negative, Credit Opinion, November 18, 2021. (Proprietary).
140 Moody’s, Comisión Federal de Electricidad (CFE) Credit Update. January 6, 2022. (Proprietary)
pipelines and generation assets are planned for importing natural gas.\textsuperscript{146} The initiative faces opposition, and Moody's points to a policy drift in Mexico that is undermining private sector confidence and support for increased investment in renewable energy.\textsuperscript{147} Other analysts see the build-up of the fossil fuel sector being in direct opposition to renewable energy and climate initiatives.\textsuperscript{148} Further, the economic result of the president's initiatives are likely to increase electricity prices.\textsuperscript{149}

NFE’s planned natural gas expansions in Mexico takes place against a backdrop of financial warnings about the expansion. The current controversy in Mexico puts NFE on the side of the president's controversial plan to increase Mexico's reliance on fossil fuels.

3. Nicaragua

Nicaragua’s gross national product is $12.6 billion, and its bond rating is b3 (stable).\textsuperscript{150} NFE plans to build, own and operate an offshore liquefaction, receiving and storage asset and an onshore regasification unit (Puerto Sandino Facility). The project is expected to be able to handle 2.4 million gallons per day and currently has commitments for 29% of capacity. NFE also anticipates building a 300MW power plant.\textsuperscript{151} The initial operations are underwritten by a 25-year power purchase agreement with Nicaragua’s electricity distribution companies.\textsuperscript{152} The project was slated for completion in fourth quarter of 2021 with operations of the power plant expected in the first quarter of 2022.\textsuperscript{153}

The Puerto Sandino facility has an estimated price tag of $700 million; the company said in February 2020 that it was funded from cash on hand.\textsuperscript{154}

In November 2021, President Joe Biden issued a ban on political officials from Nicaragua entering the United States in response to allegations about the integrity of the Central American country's elections.\textsuperscript{155}

\textsuperscript{147} Moody's, \textit{Mexico president’s proposal to reform electricity sector is credit-negative}. October 6, 2020.
\textsuperscript{148} Forbes. \textit{Political risk and analysis: Is Mexico declaring war against clean energy?} April 22, 2021.
\textsuperscript{149} Americas Quarterly. \textit{Mexicos Energy Reform 3 Risks to Investors}. February 3, 2022.
\textsuperscript{150} Moody's Investor Service. \textit{Government Of Nicaragua – B3 Stable: Regular Update}. August 16, 2021. (Proprietary)
\textsuperscript{152} Oil and Gas 360. \textit{New Fortress energy signs 25-year agreement for 300 mw power plant}. February 17, 2020.
President Daniel Ortega reportedly reshuffled its energy ministry to move forward with the NFE deal. NFE has made no public statements about the controversy.\(^\text{156}\)

4. **Brazil**

As part of Brazil’s decision to open up its gas markets, NFE has taken advantage of a series of asset sales to greatly expand its operations in South America, paying $1.98 billion in cash and stock to acquire four coastal facilities:\(^\text{157}\)

- An existing 9.5 million gallons per day LNG receiving facility and a 50% interest in an existing 1.5GW power plant power in Sergipe. The facility has a current utilization of 3%.
- A 9.5 million GPD offshore LNG facility at Santa Catarina expected to come online during the second quarter of 2022. Construction on the facility has started with an estimated price of $72 million.\(^\text{158}\)
- A 9.5 million gallons per day onshore facility and power plant at Barcarena was slated to begin operations in January 2022. The facility has committed capacity of 6%.
- A 9.5 million GPD existing onshore facility and power plant at Suape with operations expected to begin during the first quarter of 2022 with committed capacity of 3%. The estimated price is $536 million.\(^\text{159}\)

The plans include new construction of both terminal and power plant capacity to be added throughout early 2022. The total price of planned construction in Brazil is unspecified. Since the announcement of the acquisitions, New Fortress Energy has disclosed agreements for natural gas supplies to Brazil’s industrial customers. Deliveries are to start in the first quarter of 2022.\(^\text{160}\)

As NFE enters its first full year of development activity and operations on existing facilities, Brazil’s economy is likely to be growing slowly.\(^\text{161}\) The country’s 2020 GDP was BRL 7.4 trillion (USD $1.4 trillion).\(^\text{162}\) Brazil has a bond rating of Ba2 stable.

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\(^{159}\) Empresiz de Pesquisa Energetics. *Indicative LNG Terminals Plan.* October 2021, p. 34.

\(^{160}\) NFE. *New Fortress Energy Signs Agreements with Unigel to Provide Natural Gas to Fertilizer Plants in the States of Sergipe and Bahia.* August 11, 2021.


With elections in 2022 taking place in a highly charged environment, the implementation of fiscal reforms may slow down as well.

The most recent 10-year electricity plan published in 2019 anticipates a decline in hydropower and coal-fired generation and the need for new LNG terminal capacity, as well as increases in solar and wind. The country's plan for a substantial expansion of LNG imports includes multiple new terminals and power plants including those proposed by NFE. Although natural gas expansion has the support of the Brazilian government, market and tariff policies that also favor an increase in distributed generation and rooftop solar have resulted in an increase in market share to 11%. The Brazilian government has lost credibility as a climate leader given national policies that allow greater deforestation. International environmental organizations have expressed strong reservations about Brazil's LNG natural gas expansion, fearing it will crowd out renewable energy.

The country faces immediate electricity price shocks from drought conditions that have curtailed the use of hydropower. The country's efforts to increase natural gas imports adds a risk that the country is exchanging hydropower risks for price volatility from natural gas. The shift to more imported natural gas during the last year has contributed to the rising prices for electricity and other basic necessities in the country. Debate in the country includes pressure on the government to expand reliance on renewable energy.

The investment is a significant step for NFE. It could serve as a robust source of revenue for the company from the terminals, liquefaction, new fleet of ships and power plants.

5. Ireland

NFE has entered into an agreement to develop an LNG facility and CHP plant in Shannon, Ireland. Ireland's GDP is $440 billion, and it has been assigned an A2 rating. The project consists of an onshore regasification, storage and pipeline connection into Ireland’s national gas network. The company is also applying for approval to build a combined heat and power plant. The project was put on hold in

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166 Al Jazeera. Brazil pledges 50 percent emissions cut by 2030 in change of tone. November 1, 2021.
2019 pending policy deliberations in Ireland, but the company announced in 2021 that it was reviving its application.\textsuperscript{172} The announcement was followed by renewed controversy over the prospects of the plant and the risks of the project for the host community.\textsuperscript{173} Green Party officials have appealed to the nation’s planning arm to reject the proposal.\textsuperscript{174} A petition with 1,545 signatures opposing the project has been submitted to Ireland’s planning body.\textsuperscript{175}

Ireland’s recently released climate plan calls for 80\% of the electricity system to be obtained from renewable energy by 2050.\textsuperscript{176} Opponents of the New Fortress facility argue that: 1) natural gas is not a climate-neutral fuel but that methane leakage makes it a risk to the climate; 2) Ireland’s current reserves and capacity are sufficient to meet the country’s needs; 3) approving the facility will crowd out investments in renewable energy; 4) an energy security study is underway and will be released in 2022, and no project approvals of this magnitude should be considered until the issue fully discussed;\textsuperscript{177} and 5) safety risks to the surrounding population have not been considered.

Shannon LNG faces a multi-layered set of risks stemming from climate, local environmental and economic factors, domestic energy planning priorities and long-term economic development choices. The planning process is expected to be completed in March 2022. The overall outlook for a foreign investment project in the energy space in Ireland at this point is highly uncertain.

6. Sri Lanka (Sri Lanka Facility)

Sri Lanka’s 2020 GDP was $80 billion and its credit rating Caa2. The country faces persistent structural budget deficits while it is looking to attract additional foreign investment. Interest on government-supported debt consumed 70\% of revenues in 2020.\textsuperscript{178} The country’s indebtedness is driven in large measure by decades of oil payments to importers.\textsuperscript{179} The country and international investment community are coming to grips with the likelihood that the country faces bankruptcy and the need for debt restructuring.\textsuperscript{180}

In September 2021, NFE acquired a 40\% interest in a 310MW power plant in Colombo, Sri Lanka. The company plans to build an offshore LNG receiving storage and regasification terminal with capacity of 1.2 million gallons per day of LNG. This


\textsuperscript{174} Radio Kerry. Green Party groups make submission to An Bord Pleanála on Shannon LNG. November 5, 2021.

\textsuperscript{175} Safety Before LNG. 76 Irish Politicians join over One and a half Thousand people lodging submission against Shannon LNG at An Bord Pleanála. October 2021.


\textsuperscript{177} The Irish Times. Shannon gas plan would make a mockery of Irish climate goals. September 3, 2021.


\textsuperscript{179} Tamil Guardian. Sri Lanka turns Mannar’s basin and fossil fuels pay debt. September 19, 2021.

would be the first natural gas facility in Sri Lanka. The current electricity system is predominantly hydropower, coal and oil with a small amount of renewable energy. The system is run by the state-owned Ceylon Electricity Board, which has been criticized for blackouts for several years running.\textsuperscript{181}

In 2017, the United Nations Development Programme, under the auspices of the Asian Development Bank, developed a pathway for Sri Lanka to move toward a 100% renewable energy system.\textsuperscript{182} The most recent generation expansion plan calls for a significant expansion of renewable energy, curtailment of coal use, elimination of oil and an increase in natural gas reliance from zero to approximately 25%.\textsuperscript{183} Sri Lanka has also announced a plan to create a state-owned operation to develop the country’s fossil fuel resources, build pipelines and other transport options to minimize exposure to international gas markets.\textsuperscript{184} The plan will rely on a network of public private partnerships to develop resources and necessary infrastructure. The project being discussed, and the terms of the deal are expected to be agreed to in the first half of 2022. Operations are anticipated for early 2023.\textsuperscript{185} NFE has not identified any specific funding mechanism for the construction involved with the project.\textsuperscript{186}

It remains to be seen how the investments will take place, given the current financial and economic crises facing the country.\textsuperscript{187} It also remains to be seen how the political and economic problems will impact NFE’s negotiations. Discussions have commenced between Sri Lankan officials to address the structural financial issues facing the country and to avoid bankruptcy.\textsuperscript{188}

### IV. NFE Business Model in Direct Conflict With Global Climate Aspirations

New Fortress Energy makes countless claims to prospective host communities that it brings financial benefits in the form of lower electricity prices and the broader economic benefits that flow from low, stable prices. As shown throughout this report, natural gas expansion introduces substantial financial risk into the electricity, economic, financial and fiscal structures of the hosts.

NFE also makes an environmental case for the use of natural gas. The company argues that it is usually replacing diesel and other heavy oil uses, thereby reducing both toxic pollutants and carbon emissions. These arguments might bear some

\textsuperscript{183} Ceylon Electricity Board. Long-Term Generation Expansion Plan. October 2021.  
\textsuperscript{187} Foreign Policy. How to End Sri Lanka’s Food Crisis. September 27, 2021.  
\textsuperscript{188} BBC News, op. cit.
validity if it wasn’t also true that in all of the host communities discussed in this report, efforts to maximize energy sources with least-cost, zero-pollution and carbon-free technologies are not being exhausted.

Regardless of the intentions or design of national host country climate policies, NFE’s presence undermines efforts to encourage renewable energy. NFE’s environmental claims to being climate positive do not stand up under close examination. The International Energy Agency (IEA) has made it clear that for the world to meet meaningful climate goals there can be no more greenfield development around the world—yet that is precisely NFE’s business model.\textsuperscript{189}

The company’s business model has been criticized as failing to meet Environmental, Social and Governance (ESG) tests.\textsuperscript{190} Despite the claims that the company is a contributor to climate solutions it may be only a matter of time before index and other funds publicly raise ESG concerns about the company. Natural gas drilling and transport is inherently risky to the environment; natural gas methane emissions corrode any climate action agenda. The company’s activity in Puerto Rico and support for the controversial plans in Mexico are plainly in conflict with climate goals. Socially, natural gas expansion is more expensive than renewable energy, which ensures inflationary pressures from volatile natural gas prices and increased prices for basic necessities.

NFE’s model also contributes to inequality and poverty in most of the countries where it does business by putting upward pressure on prices. From a governance standpoint, NFE is frequently working in direct and indirect opposition to national climate plans. In Ireland and the U.S., LNG policy trends run contrary to evolving climate and environmental policies. In Mexico, Brazil, Nicaragua, Jamaica and Sri Lanka, where government policy is supportive of natural gas expansion, the company is introducing dysfunctional energy, financial and fiscal dynamics, and supporting policies harmful to the climate. In addition, the ownership model and its unusual accounting treatments raise governance concerns.

An overview of natural gas and its impact on the climate, environment and public health shows a very different picture than the one presented by NFE.

Natural gas is a mixture of gases extracted from fossil fuel reserves in the ground, and is often associated with oil deposits.\textsuperscript{191} Between 66 percent and 77 percent of natural gas (before processing) is methane. An additional 7 percent to 15 percent typically is comprised of “natural gas liquids,” principally ethane, propane, butanes and pentanes,\textsuperscript{192} which can be marketed for petrochemical uses.

\textsuperscript{190}Financial Times, \textit{New Fortress gas deal raises clean energy yellow card.} March 2021.
\textsuperscript{191}In contrast, “renewable natural gas” (biomethane) is generated by anaerobic digestion, as opposed to oxygenated composting or decomposition, of organic materials—such as from landfills or livestock waste. It is usually a small-scale operation, but capture and controlled combustion of renewable natural gas from landfills or livestock waste can significantly reduce methane emissions from such sources.
\textsuperscript{192}Pennsylvania State University. \textit{Natural Gas Composition and Specifications.} Accessed November 27, 2021. Some natural gas contains high amounts (ranging from 3% to 26%) of
After extraction, the gas travels through “gathering lines” (small pipelines) to processing plants that separate hydrocarbons and fluids from the methane to produce “pipeline quality” dry natural gas for transport. The processing removes water and oil, along with some sulfur and carbon dioxide. It also separates natural gas liquids (ethane, butane, etc.), which can be marketed for petrochemical production.

The processed natural gas is usually almost entirely methane. It travels through “feeder” pipelines to distribution centers, storage facilities or—as in the case of gas export projects—liquefaction facilities that cool and condense the gas to a liquid state for shipping.

Throughout this industrial process and delivery system harmful methane emissions escape into the atmosphere.

**A. Methane Is a Powerful Greenhouse Gas**

Compared mass-to-mass, methane is 86 times more powerful as a warming agent than carbon dioxide over a 20-year time frame. Approximately 25% of the net global warming that has occurred in recent decades is estimated to be due to methane. Rick Duke, senior advisor to the U.S. special presidential envoy on climate change, said methane is “by far the top priority short-lived climate pollutant that we need to tackle to keep 1.5º C within reach.”

According to scenarios analyzed by the Intergovernmental Panel on Climate Change (IPCC), global methane emissions must be reduced at least 40% by 2030 to achieve least cost-pathways that curb global warming to 1.5º C this century—the target set in Paris in December 2015—when combined with substantial reductions of carbon dioxide and other climate pollutants. The United Nations Environment Programme report states that transition to renewable energy and economy-wide energy efficiency would “substantially contribute to methane mitigation over the next few decades.” While a variety of measures to reduce methane emissions from the natural gas system could make a difference, they may take many years to

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193 The smell typically associated with natural gas is an odorant called mercaptan, which is added before the gas is delivered to the end-user, to aid in detecting leaks.  
195 Ibid.  
198 UNEP, *op. cit.*, p. 11-ES and Section 4.3.  
199 If leak controls and other measures were rigorously and broadly implemented, the industry could cut emissions by 29 million to 57 million tons annually. See: UNEP, *op. cit.*, p. 10-ES and section 4.2.
implement effectively. Achieving such measures on the part of a myriad of companies throughout the gas industrial pathway from drilling to end use is not likely to happen voluntarily throughout the industrial sector; it will require rules, monitoring and enforcement. Given the time constraint, decision-makers should not make the problem worse by approving new gas infrastructure projects.

B. Methane Is a Volatile Organic Compound That Produces Ground-Level Ozone (Smog)

Methane reacts with nitrogen oxides in the presence of sunlight to produce ground-level ozone, also known as photochemical smog, a particularly harmful form of air pollution. The UNEP report declared, “Ozone attributable to anthropogenic methane emissions causes approximately half a million premature deaths per year globally and harms ecosystems and crops by suppressing growth and diminishing production.” It found that reducing 1 million tonnes of methane prevents:

- Roughly 1,430 premature deaths per year from respiratory or cardiovascular disease, as well as avoiding roughly 4,000 asthma-related accident and emergency department visits.
- Losses of 55,000 tons of wheat, 17,000 tons of soybeans, 42,000 tons of maize and 31,000 tons of rice due to ozone exposure per year.

Methane reduction contributes not only to climate goals but also to public health and agricultural production.

C. The Amount of Methane Released From the Natural Gas Industry Is Greater Based on Aerial and Satellite Data Than Estimations Previously Suggested

The amount of methane in the atmosphere is rising faster now than at any time since the 1980s. Oil and gas extraction, processing and distribution account for 23% of human-caused emissions. Coal accounts for 12%. The venting and flaring of natural gas in the United States more than doubled between 2017 and 2018, from 255,488 million cubic feet to 470,601 million cubic feet.

For many years, natural gas enjoyed a reputation as a better option for reducing greenhouse gas emissions than coal because the smokestack emissions from a modern, efficient natural gas plant emits 50 to 60 percent less carbon dioxide than a

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201 UNEP, op. cit., p. 8-ES, Sections 1.1 and 3.3.
202 UNEP, op. cit., p. 8-ES, Section 3.4.
203 UNEP, op. cit., p. 8-ES, Section 3.5.
204 UNEP, op. cit., p. 9-ES, sections 1.1, 4.4 and 5.
205 UNEP, op. cit., pp. 6-ES, 8-ES, and Sections 1, 1.1, 2.1 and 4.1.
typical modern coal plant.\textsuperscript{207} The problem, however, is that the system of drilling, processing and delivering natural gas for end uses is fraught with emissions of methane, and methods for estimating fugitive methane emissions, such as the U.S. Environmental Protection Agency (EPA) model for estimating pipeline leaks, can no longer be deemed accurate.

Using ground-based, facility-scale measurements with validation by aircraft observations, and synthesizing recent studies of atmospheric measurements, Alvarez, et al. (2018) found U.S. emissions were roughly 60 percent more than estimated by EPA. The study investigated several segments of the oil and natural gas industry, including production, processing, and transmission prior to local distribution pipeline transport or end use.\textsuperscript{208}

To reach the impact of local distribution and end use, a subsequent academic study, Plant, et al. (2019) based its analysis on direct observations, rather than estimates, of methane emissions from major urban centers on the east coast of the United States. The researchers from the University of Michigan, Harvard University, and the National Oceanic and Atmospheric Administration, conducted 20 research flights totalling 120 flight hours to measure air contamination from older, leak-prone urban centers. Their study found that observed methane emissions were more than double the amount estimated in the EPA inventory for four of the six areas observed.\textsuperscript{209} The six urban centers observed comprise roughly 14.4 percent of the natural gas distribution loss for the United States.\textsuperscript{210}


\textsuperscript{208} R. A. Alvarez et al., Assessment of methane emissions from the U.S. oil and gas supply chain, Science 361:186-88, 2018.


\textsuperscript{210} Ibid.
Relying on these two studies and other information, Howarth and Jacobson (August, 2021), found that the greenhouse gas emissions (measured in carbon equivalents) from natural gas and coal are roughly equivalent because of the role of methane emissions. Their conclusion was drawn as part of a broader effort to compare emissions of blue and grey hydrogen with other fossil fuels, the results of which is shown in the figure below:

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211 One Tg equals 1 million tons.
212 Plant, *op cit.*, p. 8505, Figure 4.
Since then, the researchers who conducted the municipal impacts study have evaluated urban methane emissions based on satellite data from the TROPOspheric Monitoring (TROPOMI) instrument included on the Sentinel-5 Precursor satellite for methane and carbon monoxide. They determined that the EPA inventory underestimates methane emissions not only for the large eastern cities previously examined, but also for four additional cities. For all but the smallest emitter of methane, emission estimates from the TROPOMI-based analysis proved to be significantly larger than the levels estimated by inventories. They found when considering all eight cities in the aggregate, the satellite data yielded a total emission rate 2.8 times greater than the EPA inventory total. The researchers concluded that “a large correction to estimated urban natural gas emissions appears warranted,” observing that, “Such a correction would have a significant impact on the loss rate of the natural gas supply chain.”

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The researchers also examined data for three large municipalities outside the U.S.—Mexico City, Buenos Aires, and Mumbai. Again, emissions appeared to greatly exceed inventory estimates, suggesting that substantial urban methane emissions may exist across different countries and urban typology.

**D. Hydraulic Fracturing for Extraction of Natural Gas Is a Water-Intensive, Messy Business**

Shale gas is extracted by injecting water containing sand and chemical additives at high pressure to fracture the underground rock formation and release the gas. Typically, the injection fluid is 90 percent water, 9 percent sand, and 1 percent chemical additives that include friction reducers, surfactants, acids and other compounds.

Hydraulic fracturing (fracking) often requires the use of large volumes of water, and the amount of water used increases as laterals become longer in response to depletion of more easily accessible reserves. A U.S. Geological Survey (USGS) report found that from 2000 to 2014, median annual water volume estimates for hydraulic fracturing in horizontal wells had risen from about 177,000 gallons per oil or gas well to more than 4 million gallons per oil well and 5.1 million gallons per gas well. In contrast, it reported that median annual water use from vertical and directional wells remained below 671,000 gallons per well. A study of shale and gas production in Vaca Muerta, Argentina, similarly noted that water use has increased over the last decade, as the length of the horizontal portions of the drilling process has increased.

The fluid used for fracking contains water, sand, and several toxic chemicals. The water becomes contaminated by toxic chemicals in the fracking process, and disposal of contaminated water is a problematic challenge. Some of this water is “consumed,” in that it is not returned to the water cycle, which is a special problem for areas with limited water resources; some is reused in the fracking process; and some is disposed through underground injection.

The USGS reports that not only the fracking itself, but the disposal of fracking wastewater through deep well injection, can cause earthquakes. It reports that while the annual number of earthquakes in the central and eastern United States averaged 25 per year from 1973 to 2008 for quakes of magnitude 3 or higher, at least 100 such earthquakes have occurred each year since 2013. The rate peaked in

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2015 at 1,010 and then declined to 130 in 2019—still much higher than the earlier average.\textsuperscript{219} The USGS noted:

Fracking intentionally causes small earthquakes (magnitudes smaller than 1) to enhance permeability, but it has also been linked to larger earthquakes. The largest earthquake known to be induced by hydraulic fracturing in the United States was a M4 earthquake in Texas. In addition to natural gas, fracking fluids and saltwater trapped in the same formation as the gas are returned to the surface. These wastewaters are frequently disposed of by injection into deep wells. The injection of wastewater and saltwater into the subsurface can also cause earthquakes that are large enough to be damaging ... The largest earthquake known to be induced by wastewater disposal was a M5.8 earthquake that occurred near Pawnee, Oklahoma in 2016.\textsuperscript{220}

Improperly cased oil or gas wells also can leach methane, radioactive material, and other gases into the surrounding groundwater, which can sometimes reach drinking water supplies.

\textbf{E. The Host Country or Community for an LNG Export Terminal Bears an Unfair Burden}

When a company builds and operates an LNG export terminal, the public in the host country or community bears the upstream burden and much of the midstream burden of air pollution, water pollution, and habitat impacts. These impacts result from:

- **Natural gas drilling and extraction**—including water consumption, water pollution, equipment energy needs and fugitive emissions

- **Natural gas drilling and extraction wastewater disposal**—including the need to prevent earthquakes from deep underground injection of wastewater

- **Pipeline transport for processing**

- **The processing of the extracted gas**

- **Pipeline transport of the processed gas to the liquefaction plant**—including pipeline construction impacts and gas leakage

- **Pipeline compression plants impacts**

- **The liquefaction process**, and

- **Transport to the export terminal** for loading onto ships.


\textsuperscript{220} U.S. Geological Survey. \textit{Does the production of oil and gas from shale cause earthquakes? If so, how are the earthquakes related to these operations?} Accessed November 29, 2021.
Fugitive methane emissions are typically released from all of these stages of the process.

The host bears the burden of the greenhouse gas (GHG) impacts from the upstream system and much of the midstream system, as well. The greenhouse gas emissions become part of the host country’s proportionate responsibility to address climate change.

The more natural gas is extracted for LNG export, the more action the host country will need to take, in terms of emission reductions and mitigation efforts to offset the additional GHG pollution from LNG export, to meet its national climate goals.

In return, the public primarily gains only more smog and higher prices for natural gas at home.²²¹

**F. The Importing Country That Receives the LNG Will Experience More GHG Pollution Than It Likely Anticipates**

The receiving country will see pollution emissions from the local distribution and end-use burning of natural gas.

Burning natural gas does produce lower nitrogen oxide emissions, and much lower emissions of sulfur dioxide and particulates, all of which irritate the respiratory and cardiovascular system, in comparison to coal.²²² And, as noted above, it emits less carbon dioxide. Nevertheless, natural gas combustion remains a significant emitter of carbon dioxide and nitrogen oxides.

The importing country also experiences the fugitive emissions of methane that can occur from the unloading and regasification of the LNG and the transport of the restored natural gas to local distribution points. The Plant, et al. (2019) study is particularly relevant here.

Also, to the extent that the gas is distributed to homes for cooking or heating, it can cause indoor air health risks. A meta-analysis of 41 studies—including research conducted in Australia, Austria, Canada, China, the Czech Republic, Germany, Japan, the Netherlands, New Zealand, Spain, Russia, the United Kingdom, and the United States—found that cooking with gas increases the risk of asthma in children.²²³ A University of Queensland study attributed more than 12 percent of childhood asthma impacts (measured in disability adjusted life-years) in Australia to gas cooking stoves, which are used in well over a third of households in the country.²²⁴

## Appendix: NFE Proposed Facilities, Completion Dates, Estimated ($USD), Source

<table>
<thead>
<tr>
<th>Asset</th>
<th>Estimate Complete</th>
<th>$USD Millions</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquefaction</td>
<td>1Q - 2023</td>
<td>800</td>
<td><a href="https://ir.newfortressenergy.com/static-files/39bfc12dea34-4bbb-a997-3315bf0063d8">https://ir.newfortressenergy.com/static-files/39bfc12dea34-4bbb-a997-3315bf0063d8</a></td>
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<tr>
<td>Offshore LNG Facility</td>
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<td>50</td>
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</tr>
<tr>
<td>Onshore Regasification</td>
<td></td>
<td>566</td>
<td><a href="https://www.pleanala.ie/anbordpleanala/media/abp/cases/reports/304/r304007.pdf?r=396536722246">https://www.pleanala.ie/anbordpleanala/media/abp/cases/reports/304/r304007.pdf?r=396536722246</a>, p. 13</td>
</tr>
<tr>
<td>Storage and Pipeline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHP Power Plant</td>
<td></td>
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<tr>
<td>Offshore Regas/Storage</td>
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</tr>
</tbody>
</table>

7.9 percent of asthma burden impacts were due to damp housing. It further found that if all homes were equipped with systems to vent the gas outside, the asthma burden would drop to 3.4 percent.
About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute’s mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. [www.ieefa.org](http://www.ieefa.org)

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Tom Sanzillo, director of finance for IEEFA, is the author of numerous studies on the oil, gas, petrochemical and coal sectors in the U.S. and internationally, including company and credit analyses, facility development, oil and gas reserves, stock and commodity market analysis and public and private financial structures. Sanzillo has experience in public policy and has testified as an expert witness, taught energy industry finance and is quoted frequently in the media. He has 17 years of experience with the City and the State of New York in senior financial and policy management positions. As the first deputy comptroller for the State of New York Sanzillo oversaw the finances of 1,300 units of local government, the annual management of 44,000 government contracts, and over $200 billion in state and local municipal bond programs as well as a $156 billion global pension fund.

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