

Aquidneck Island Long-Term Energy Solutions

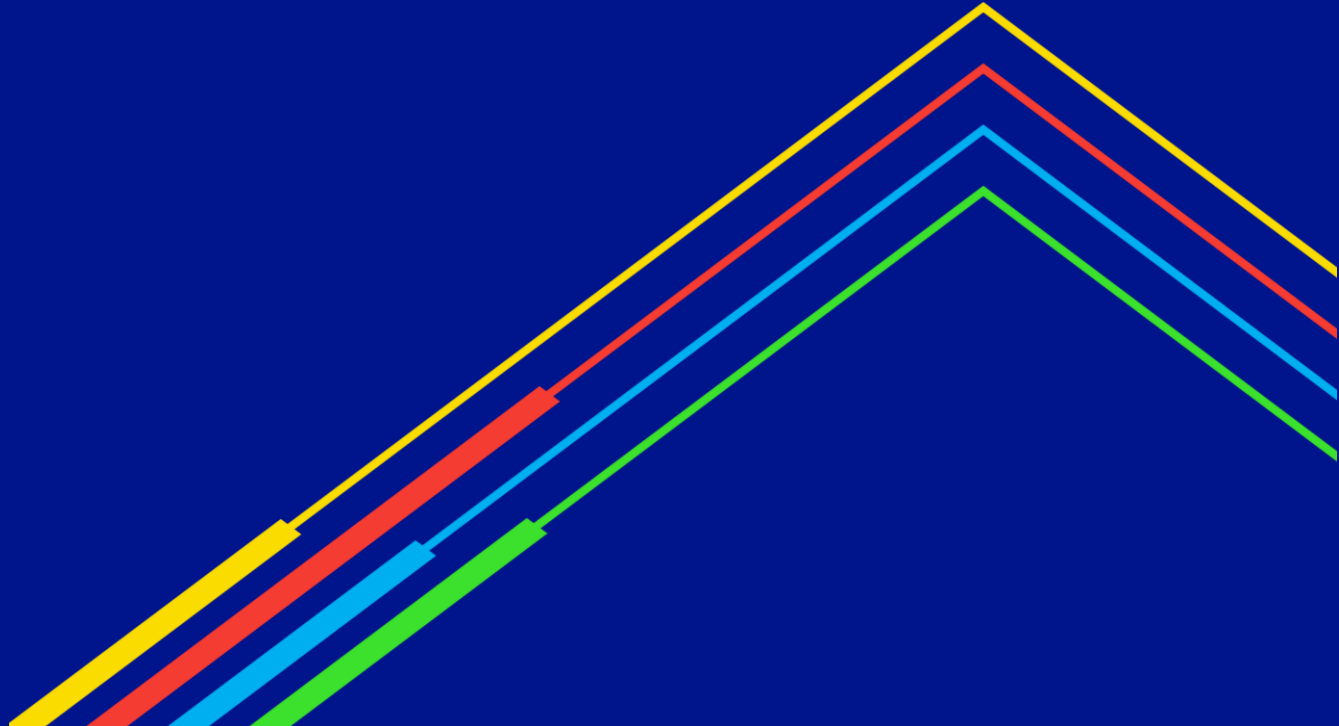
October 2020

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1 Winter Operations at Old Mill Lane – Portsmouth, RI

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Old Mill Lane Temporary LNG Site - Portsmouth

Purpose of Operation:

- Primary function is to provide supplemental gas supply to Aquidneck Island when pipeline supply cannot meet the demand (which can happen on the coldest winter days.)
- During high demand days, the facility will vaporize the stored LNG and inject it into the pipeline, thus shaving the top off the peak demand (“peak-shaving”)
- The Old Mill Lane facility operates temporarily and is staged seasonally only (during winter months).
- After winter, the facility is fully de-mobilized and all LNG equipment is removed and the site is no longer needed.



Winter Operations – 2020/21

Old Mill Lane Trucked LNG Site - Portsmouth

- September – Installation of new electrical service (to reduce need of continuous generator onsite – reducing noise).
- October – site preps begin, such as fencing and ground mat installation.
- November - all the electrical gear installed, office trailer delivered, LNG equipment delivered and staged, and testing performed
- December 1st – site operational - will provide additional supply into the Aquidneck Island natural gas system if peak-hour demand is above contracted supply or there is an event impacting transmission supply to the island
- April 1 – site demobilized
- To Note - Last winter the site did not inject for supply need



2 Long-Term Energy Solutions

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Aquidneck Island Long-Term Gas Capacity Study

Prepared by National Grid

September 2020



Two Challenges Facing Aquidneck

1 Gas Capacity Constraint

Interstate pipeline operators have restricted how much gas **National Grid** can bring into Aquidneck via the pipe going into Portsmouth.

On extremely cold days, this means that **gas demand on Aquidneck will exceed gas supply into the island.**

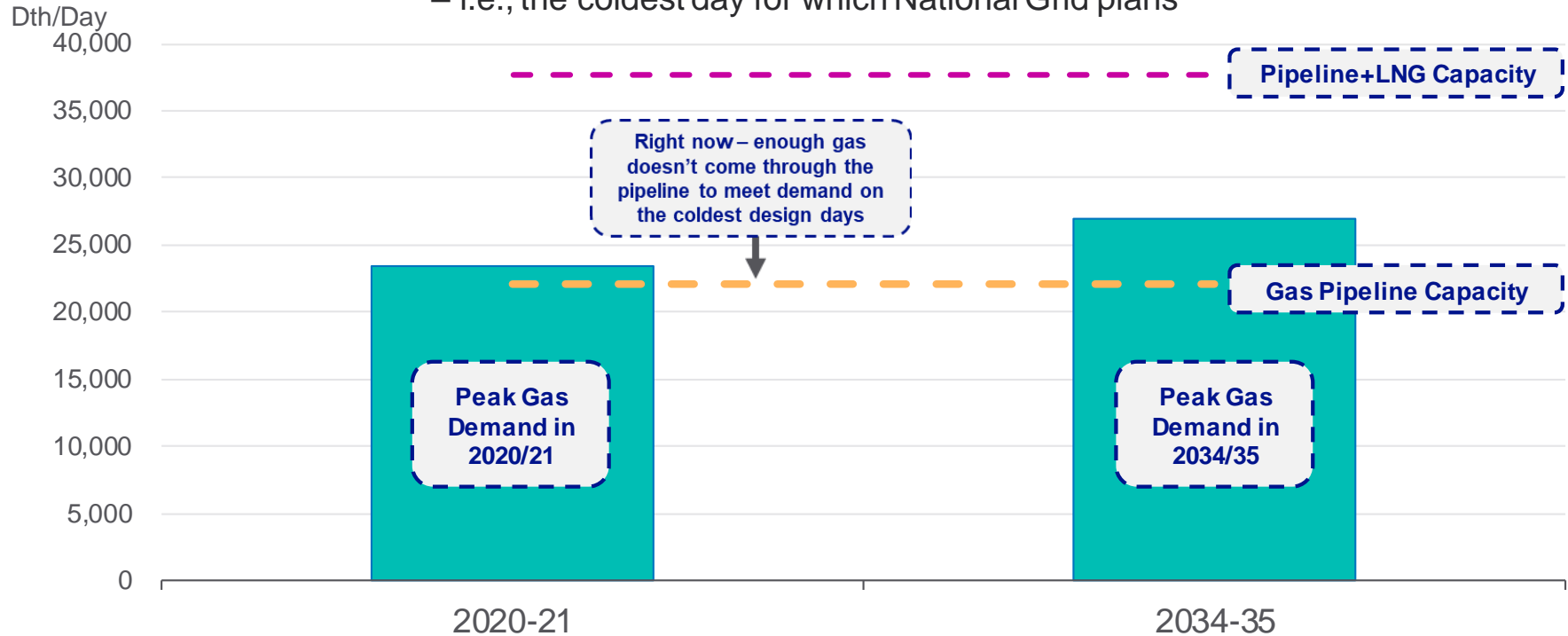
2 Gas Capacity Vulnerability

Aquidneck is supplied gas by a single transmission pipeline, and is at “the end of a pipe.” **That means pipeline incidents elsewhere can disproportionately impact Aquidneck.**

Gas Demand vs Pipeline Capacity on Aquidneck

Expected Gas Demand on Aquidneck on a “Design Day”

– i.e., the coldest day for which National Grid plans



Current Efforts to Ensure Reliability on Aquidneck

Portable LNG (Liquefied Natural Gas) at Old Mill Lane

- National Grid installed portable LNG capacity at Old Mill Lane in Portsmouth as a source of extra gas supply.
- While we expect to rarely use this facility—**last year, the LNG facility was not needed or used**—it greatly reduces the chance of a service interruption. In fact, even on extremely cold days, **the Old Mill Lane facility could supply nearly 50% of the island on its own.**
- National Grid is taking action to reduce any impact on nearby residents.

Energy Efficiency and Demand Response

- National Grid has partnered with Aquidneck municipalities to increase participation in energy efficiency programs
- National Grid has implemented a gas “demand response” pilot (e.g., compensating customers for reducing their gas usage)

Finding a Long-Term Solution

National Grid undertook an extensive process to develop long-term solutions to the gas need on Aquidneck. **We looked at a wide variety of options, considering everything from a new gas pipeline to converting gas heating systems to electric.**

National Grid has not yet developed a recommendation. Before we do so, we are using opportunities like this to gather community feedback. **Today, we'll review four different approaches to meeting the need on Aquidneck Island.**

National Grid has only proposed solutions that are safe for Aquidneck residents and our employees.

For each solution, we have identified any needed safety procedures, which you can read about in the Aquidneck Island Long-Term Gas Capacity Study (posted online).

Approach to Identifying Potential Long-Term Solutions

From a wide variety of solutions considered...

- Portable Liquefied Natural Gas (LNG)
- Permanent LNG
- Pipeline infrastructure
- Energy efficiency
- Gas demand response
- Heat electrification
- Renewable natural gas
- Hydrogen blending



We identified four solution portfolios that could close the demand gap **and** provide backup supply in the event of an upstream pipeline disruption

1

Non-Infrastructure Solution relying exclusively on electrification, demand response, and efficiency

2

LNG Solution at new location, including potential for low-carbon hydrogen

3

Transmission Pipeline Project (AGT)

4

Continue Portable LNG at Old Mill Lane, with demand-side measures to preserve contingency

Old Mill Lane used in interim years until new capacity is established

Incremental gas EE and DR can complement infrastructure in these solutions

1 Exclusively Non-Infrastructure Solution

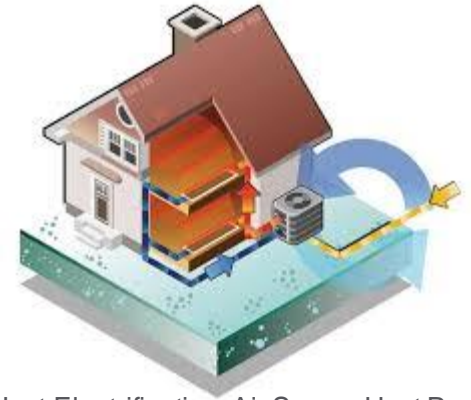


What It Means:

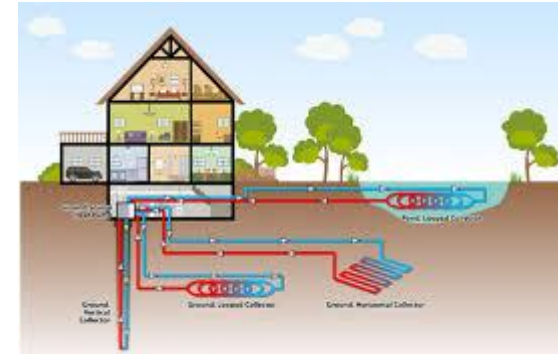
Dramatically reduce gas demand by 1) electrifying most gas customers, 2) launching new gas demand response programs, and 3) ramping up energy efficiency—all incremental to current state-wide energy efficiency programs and specific to Aquidneck Island



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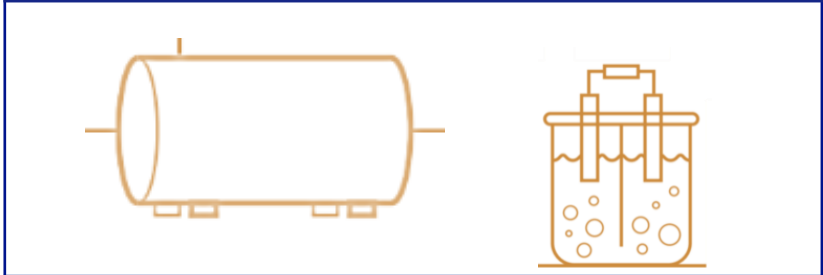


Heat Electrification: Air Source Heat Pumps



Heat Electrification: Ground Source Heat Pumps

2 New LNG (with long-term hydrogen hub potential)



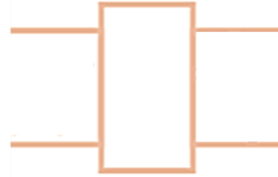
What It Means:

Could take various forms: 1) Portable or permanent LNG facility at a new Navy site, or 2) LNG barge offshore of the island. Old Mill Lane used through at least 2023/24 as solution is implemented. Can be paired with new gas demand response and energy efficiency.

Option to use on-site electrolyzer to produce hydrogen that can be blended into the gas network and potentially provide local supply for an eventual 100% hydrogen network or distribution for other uses.



3 Transmission Pipeline Project – *potential AGT project*



What It Means:

Work with interstate pipeline operator to develop a new project, targeted either for Aquidneck or for broader region. National Grid evaluated an approach that would solve reliability concerns but need additional energy efficiency / demand response to meet growing demand. Assumes cost-share with Massachusetts.



4 Continue Portable LNG at Old Mill Lane



What It Means:

Continue to rely on portable LNG at current Old Mill Lane site indefinitely, which meets projected needs through at least 2034/35. Can be paired with incremental demand response and energy efficiency to maintain current levels of reliability even as demand grows.



Considerations for Evaluation
























All options will require continuing to use Old Mill Lane site for at least 3-4 years

	Non-Infrastructure	New LNG	AGT Pipeline Project	Portable @ OML paired w/ DSM
Last Year Old Mill Ln Needed	Circa 2032/33	2023/2024 (at earliest)	2028/29	n/a

In addition to timing, we've evaluated all options on:

Cost	Reliability	Community Impact	Environmental Impact	Feasibility
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Summary: Cross Comparison

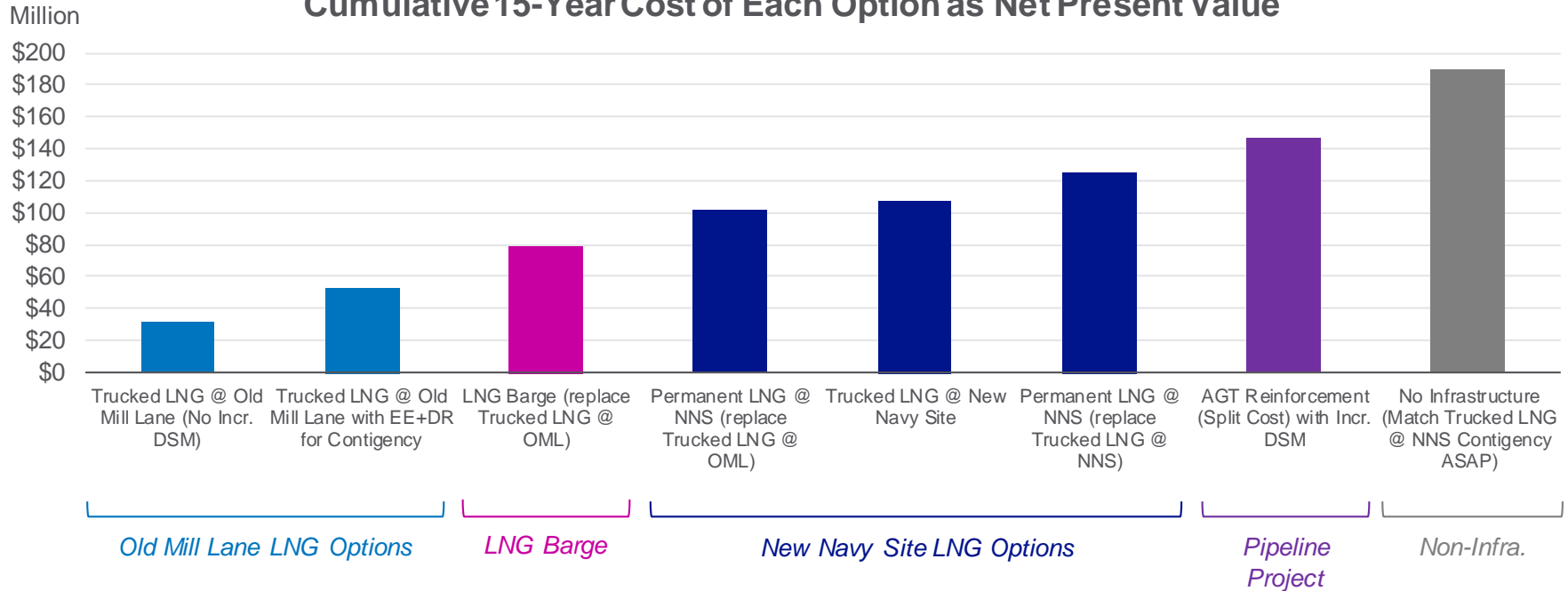
	Non-Infra	New LNG	AGT Pipeline Project	Portable @ OML paired w/ DSM
Size	~14,000 Dth/day	12,000-14,000 Dth/day (incl. DSM)	AGT N/A (+5,000 Dth/day DSM)	15,600+ Dth/day (+3,000 Dth/day DSM)
Last Yr Old Mill Ln Needed	Circa 2032/33	2023/24 (port./barge) 2025/26 (permanent*)	2028/29	n/a
Cost		 Barge  Navy		
Reliability		 Port./Barge  Perm.		
Community				
Local Environmental				
Implementation		 Barge  Navy		

Note: All figures represent Base Demand Scenario. Additional data provided in supporting report—some figures in process of being finalized. Capacity = 2034-35 capacity.

* If replacing portable at Old Mill Lane. If replacing portable at new navy site, then 2023/2024.

Cost Comparison

Cumulative 15-Year Cost of Each Option as Net Present Value



We need your feedback! Go to: ngrid.com/aquidneck

The screenshot shows the National Grid website for Aquidneck Island. The browser address bar displays nationalgridus.com/aquidneck-long-term-gas-capacity-study. The navigation bar includes links for Rhode Island, Gas and Electric, For your Business, Gas Emergencies, Power Outages, Our Company, and Contact Us. The main header features the National Grid logo and navigation links for Your Accounts, Billing & Payments, Save Energy & Money, and Safety & Outages. A green button for Pay Your Bill and a blue button for Sign In / Register are also present.

The main content area is titled "Feedback" and contains the following text:

portfolios. All proposed solutions are safe, and for each, we have identified timelines, costs, reliability implications, community impacts, local environmental impacts, and implementation feasibility. All proposed solutions will continue to advance demand side management initiatives (energy efficiency and demand response) that have already started across Aquidneck Island.

Our goal of this study is to help inform more discussions and gather feedback from a variety of stakeholders. In addition to attending a virtual open house in October, customers can also offer their feedback using the link below. Our hope is that we can provide a recommendation by the end of the year on a path forward to pursue a long-term solution or combination of solutions for Aquidneck Island. We look forward to your review and welcome your feedback.

Below the text, there are two links:

- [Read the Full Report](#)
- [Submit Your Feedback](#) (This link is circled in red in the image)

To the right of the text, there is a graphic titled "Aquidneck Island Long-Term Gas Capacity Study" prepared by National Grid, dated September 2020. The graphic features a collage of images including a boat, a person in a hard hat, and a family sitting at a table.

Below the graphic, there is a section titled "Winter Reliability Measures for Aquidneck Island" with the following text:

Learn more about steps National Grid has taken to prepare for gas operations during this upcoming winter season.

Below this text, there is a link: [Gas Reliability on Aquidneck Island](#)

At the bottom right, there is a section titled "Clean Energy Promise for Rhode Island".

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