

March 8, 2021

Chairman Ronald T. Gerwatowski
Commissioner Marion S. Gold
Commissioner Abigail Anthony
Public Utilities Commission
89 Jefferson Blvd.
Warwick, RI 02888

Re: Docket No. 5099 – National Grid ‘s FY 2022 Gas Infrastructure, Safety and Reliability Plan

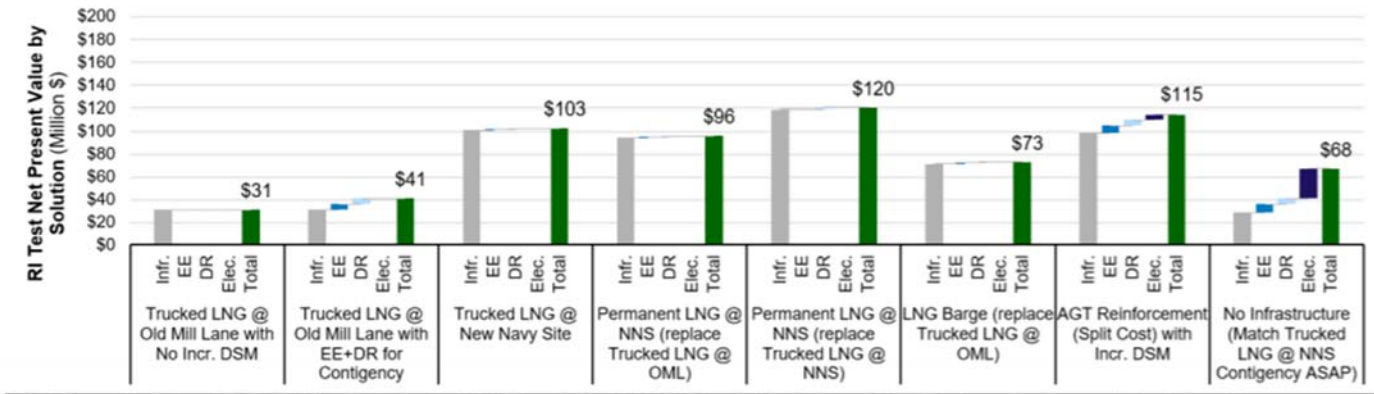
Dear Chairman Gerwatowski, Commissioner Gold, and Commissioner Anthony:

Thank you, on behalf of Acadia Center, for the opportunity to provide comments on the FY 2022 Gas Infrastructure, Safety and Reliability Plan (“the ISR Plan”) in Docket No. 5099. Acadia Center is a non-profit research and advocacy organization committed to advancing the clean energy future and is at the forefront of efforts to build clean, low-carbon, and consumer-friendly economies. Acadia Center respectfully requests the Commission reject or repurpose the \$4.9 million proposed by National Grid to pursue three potential gas infrastructure options on Aquidneck Island and initiate a coordinated docket to wind down the gas distribution system.

Aquidneck Island Capacity Study

Acadia Center attended National Grid’s public engagement meetings on Aquidneck Island and was disappointed to see the Company continually highlight the Utility Implementation Costs of their Long-Term Gas Capacity Study solutions rather than use the Net Rhode Island Cost Comparison. This strategy made the non-infrastructure solution appear to be the most expensive option since it ignored the nature of the costs and the benefits to customers. In fact, most of National Grid’s proposals focused on building new gas infrastructure which increases ratepayer costs. The non-infrastructure solution is the only proposal that focused on measures that will serve to significantly reduce participating ratepayer costs and energy use through weatherization and electrification. When including the Net Rhode Island Cost Comparison, as shown in Figure 1 below, the non-infrastructure solution proposed in the study is the best value to cease operations at the Old Mill Lane Liquefied Natural Gas (LNG) facility.

Figure 1: Net Rhode Island Test Cost Comparison in Aquidneck Island Capacity Study¹



Notes: Net present value based on the Rhode Island cost test, using a 7.54% discount rate and 2.00% inflation rate. Infrastructure costs include fixed annual costs assumed to incur between the install year and 2034/35, net of commodity cost savings, which are based on forecasted normal year consumption through 2034/35. Demand side resource costs include incremental technology costs and non-incentive program costs, net of benefits accumulated over the useful life of the resource. These benefits are based on the RI Test and monetized per the 2018 AESC, except non-energy benefits and macroeconomic benefits which are excluded. Avoided electric distribution capacity benefits are monetized in the same way, although high levels of electrification may instead necessitate upgrades, which may manifest as a net cost. These are based on demand forecasted in a base economic scenario.

A more moderately sized non-infrastructure solution than that evaluated by the Company is likely to be an even better deal for ratepayers. National Grid did not consider any strategies that incorporate a moratorium on new gas connections—despite the common-sense notion that to get out of a hole, you must first stop digging. National Grid assumed continued gas demand growth resulting from new building construction and conversions of delivered fuels customers. As such, the non-infrastructure solution is sized unnecessarily large to meet a future constraint issue that will only arise if the Company continues to irresponsibly connect customers above and beyond what their current pipe infrastructure can accommodate. By pursuing an immediate moratorium and smaller non-infrastructure solution, the Company can spend less ratepayer money overall, solve the current capacity constraint, and eliminate the need for Old Mill Lane or any other new energy facilities within a few years.

Acadia Center developed an Alternatives Analysis for Aquidneck Island’s energy needs, included as Appendix 1 below, and subsequently presented the findings to local elected officials of Portsmouth and Newport, Rhode Island. Acadia Center found that by instituting a moratorium and investing in a mix of weatherization (Wx), air source heat pumps (ASHP), and heat pump water heaters (HPWH) for existing gas customers, National Grid could relieve the Aquidneck Island gas constraint for far less investment than its slate of infrastructure expansion proposals. Following these presentations, the Portsmouth Town Council unanimously supported a moratorium and non-infrastructure solution² while Newport unanimously passed a resolution endorsing “the non-infrastructure solution exclusively on electrification, demand response, and efficiency” to meet future energy needs on Aquidneck Island.³

¹ This chart is presented as Figure 16 in the Aquidneck Island Gas Capacity Study published by National Grid.

² Newport City Council Resolution 2020-97. December 9, 2020. https://www.clerkshq.com/Content/Attachments/Newport-ri/2020_r97.pdf?clientSite=Newport-ri

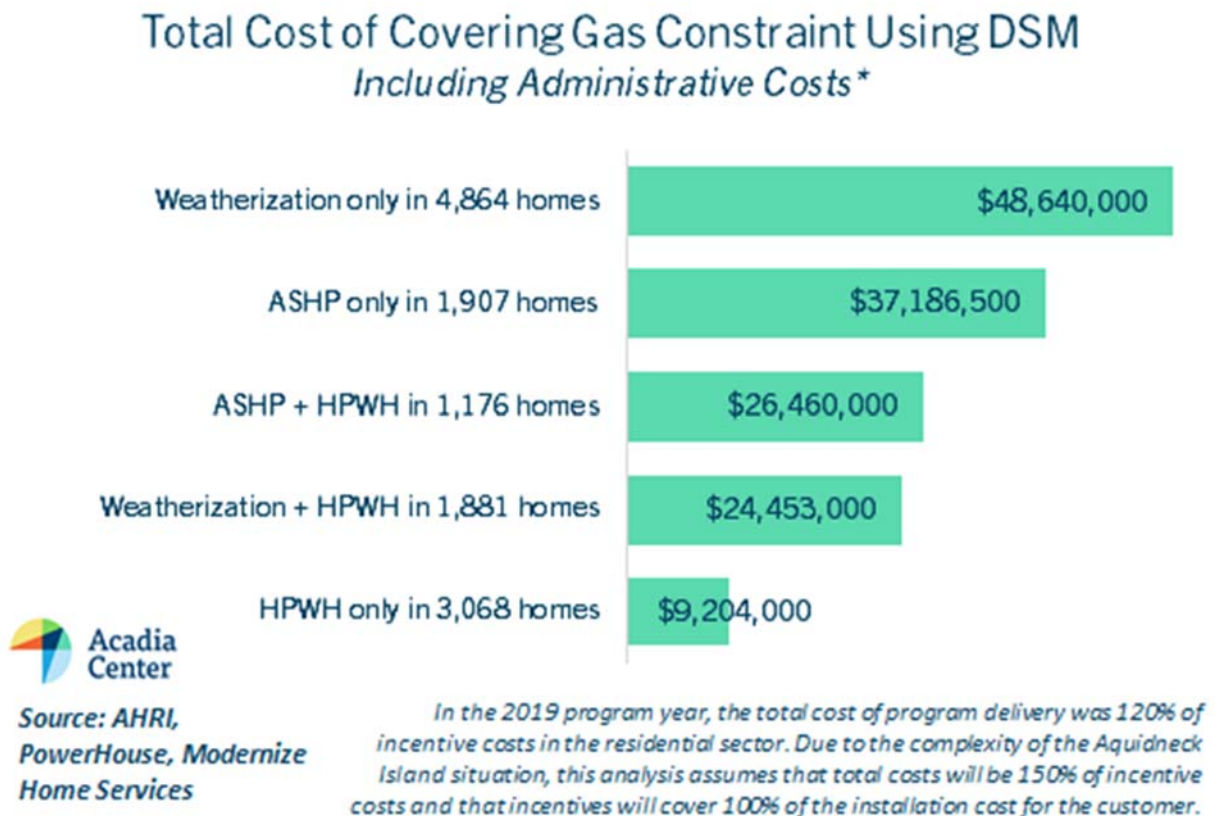
³ Portsmouth Town Council Meeting Minutes. November 23, 2020. Page 11. <https://www.portsmouthri.com/AgendaCenter/ViewFile/Minutes/11232020-1059>

Repurpose or Reject Aquidneck Island Investments in Docket 5099

The Company’s “hybrid” approach rejects the strategy preferred by the elected officials in Portsmouth and Newport and instead proposes using ratepayer funds across several dockets to build 1) a new energy facility 2) miles of new gas mains and hundreds of new building connections enabled by the new energy facility and 3) incremental investments in weatherization and electrification to offset the new gas growth. This is an inefficient and imprudent use of ratepayer funds and seems designed primarily to further National Grid’s own financial interests because it allows the Company to build and rate base more gas infrastructure than it would to simply implement the demand reduction measures. The \$4.9 million requested in the FY2022 ISR plan to study a new and already controversial energy facility elsewhere on Aquidneck Island looks past obvious cost-effective demand reduction strategies and merely shifts valid safety concerns from one part of the community to another.

These funds, and the anticipated requests for \$15 million in FY2023 and \$34.6 million in FY 2024⁴, would be better invested in a weatherization and electrification non-pipes alternative (NPA) to solve the gas constraint. Acadia Center’s analysis demonstrates that addressing the current gas constraint with these non-infrastructure measures would cost significantly less than any of the energy facilities National Grid proposes to cease operations at the Old Mill Lane site. It costs ratepayers nothing to institute a moratorium and pursuing a purely non-infrastructure demand reduction approach with consumer-friendly measures is a lower cost strategy to resolve the current 129 Dekatherm/hour peak gas constraint, as demonstrated in Figure 2 below and in the Appendix.

Figure 2: Total Cost of Covering Gas Constraint Using Demand Side Management



⁴ National Grid Response to PUC Data Request 1-16.

It is inconceivable National Grid would fail to even analyze a solution that utilizes a moratorium and demand side measures to relieve its claimed capacity constraints. National Grid has experience in identifying and implementing non-wires alternatives (NWA) on the electric distribution system and has committed to developing NPAs for the gas distribution system.⁵ Aquidneck Island represents the ideal first venue to implement NPAs given its geographic constraints and principles surrounding future development, notably that “natural gas is not a long-term energy solution for the Island and State policy should be altered.”⁶ Acadia Center respectfully requests the Public Utility Commission reject the \$4.9 million proposal to study a new LNG facility and instead direct the Company to develop a NPA for Aquidneck Island in coordination with the System Reliability Procurement (SRP) Technical Working Group.

Gas Expansion Defeats Rhode Island’s Climate Goals

Methane is a potent greenhouse gas (GHG) and is the primary component of fossil gas, or what the fossil fuel industry markets as “natural gas.” Methane leaks throughout its lifecycle—from drilling and fracking wells, to transportation through communities and thousands of miles of pipes, and finally into a building or power plant for combustion. Leakage occurs both as a result of intentional, operational venting of fossil gas⁷ as well as through countless ruptures, cracks, and joint gaps. This non-combusted methane is over 80 times more damaging⁸ to the climate in its first 20 years in the atmosphere than the carbon dioxide emissions that would otherwise result from its combustion at power plants, buildings, or through various intentional flaring⁹ sites within the gas network.¹⁰

In fact, when accounting for reported methane leakage rates of 2.7 percent¹¹ recently found in the Northeast’s local distribution networks, systemic use of gas in building heating may have a similar or larger GHG footprint than oil or *even coal*, as demonstrated in Figure 3 below. The methane leakage problem is widespread throughout the region’s aging gas infrastructure, some of which dates back as early as 1860 and exhibits varying degrees of

⁵ Docket 5080, System Reliability Procurement Three-Year Plan, includes commitment from National Grid to develop non-pipes alternatives framework over the course of 2021-2023.

⁶ The (Newport) North End Development Plan, unanimously adopted by the Newport City Council on January 27, 2021. Page 36 https://clerkshq.com/Content/Attachments/Newport-ri/210127_01.pdf?clientSite=Newport-ri

⁷ Venting is the direct release of gas into the atmosphere and regularly occurs during system operations such as pressure release emergencies, blow-down of gas equipment prior to repairs, bleed-off of gas pressure during routine operation of pneumatic devices, to avoid pressure build up, and for several other reasons.

⁸ Veysey, Jason, J. Timmons Roberts, Daniel Traver, Brett Cotler, Benjamin Gross, Angie Kim. “Deeper Decarbonization in the Ocean State: The 2019 Rhode Island GHG Reduction Study.” *Stockholm Environment Institute and Brown University Climate and Development Lab*. September 12, 2019. Page 14. <https://www.sei.org/wp-content/uploads/2019/09/deeper-decarbonization-in-the-ocean-state.pdf>

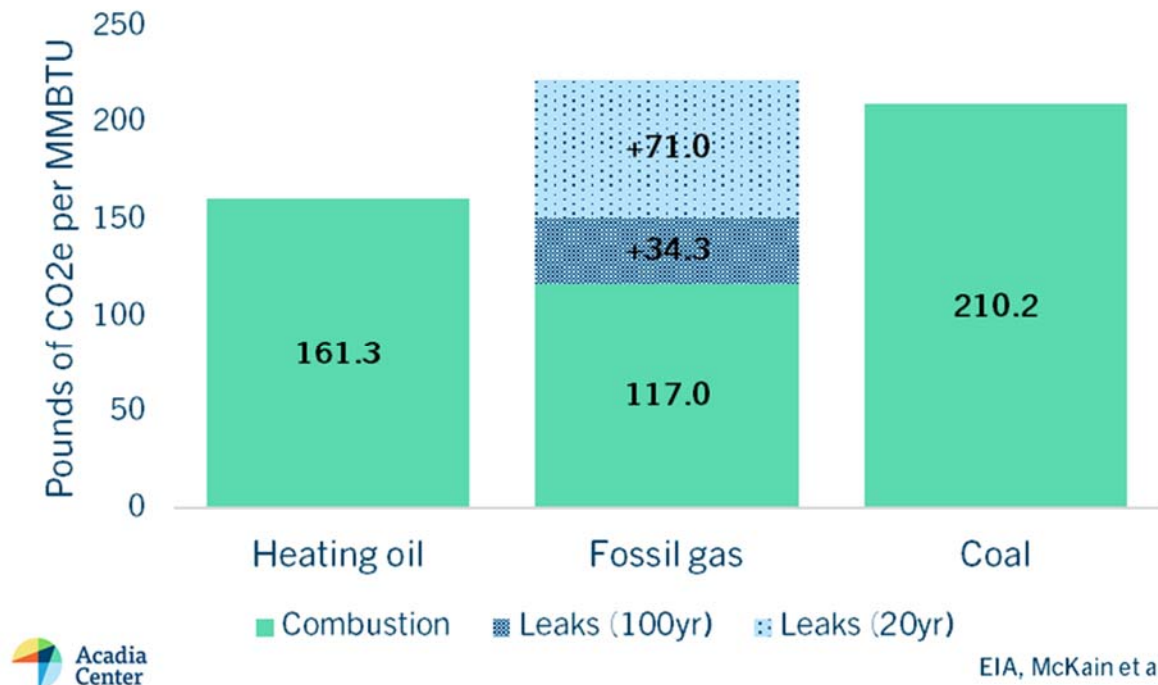
⁹ Flaring differs from venting. Flaring is the intentional and controlled combustion of fossil gas. Flaring is more common than venting, but both venting and flaring routinely occur during oil and gas drilling, production, gathering, processing, and transportation operations. According to the Department of Energy, flaring and venting may be related to safety, economics, operational expediency, or a combination of all three.

¹⁰ “Natural Gas Flaring and Venting: State and Federal Regulatory Overview, Trends, and Impacts.” *Department of Energy: Office of Oil and Natural Gas, Office of Fossil Energy*. June 2019

¹¹ McKain, Kathryn, Adrian Down, Steve M. Raciti, John Budney, Lucy R. Hutyra, Cody Floerchinger, Scott C. Herndon, Thomas Nehrkorn, Mark S. Zahniser, Robert B. Jackson, et al. “Methane Emissions from Natural Gas Infrastructure and Use in the Urban Region of Boston, Massachusetts.” *Proceedings of the National Academy of Sciences* 112 (7): 1941-1946. <https://www.pnas.org/content/112/7/1941>

corrosion, joint leaks, and cracks.¹² Repairing the most dangerous leaks is an important public priority, but complete systemic replacement would add massive costs for ratepayers at a time we need to transition off fossil fuels entirely. Acadia Center is calling for a rapid cessation in gas expansion and a complete transition to non-fossil fuel heating sources.

Figure 3: Emissions Impact from Systemic Methane Leakage¹³



Approving ratepayer funds to expand gas infrastructure is particularly troubling with regard to climate science. The Resilient Rhode Island Act established a goal to reduce the state’s greenhouse gas emissions by 80% below 1990 levels by 2050.¹⁴ When including climate harming methane leakage¹⁵ that occurs throughout the distribution network, increasing the state’s reliance on fossil gas is inconsistent with meeting this goal, as demonstrated in Figure 4 below.

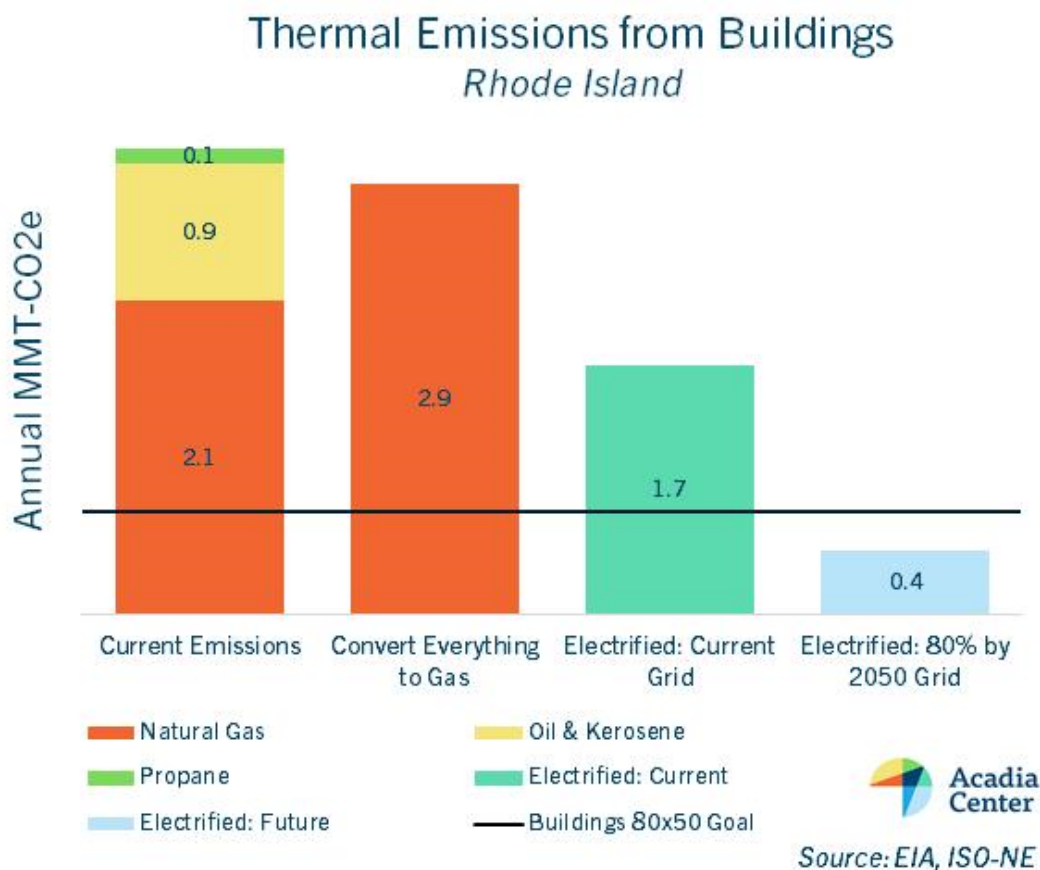
¹² Ackley, Bob, Molly Fairchild, Sarah Griffith, Nathan Phillips, PhD, and Regina LaRocque, MD, MPH. “Rolling the Dice: Assessment of Gas System Safety in Massachusetts.” *Gas Leaks Allies*. September 13, 2019.

¹³ Carbon Dioxide equivalent (CO₂e) is presented for both the 20-year and 100-year global warming potential of methane leakage. Methane’s impacts are more severe in the first 20 years before the compound starts to deteriorate in the atmosphere. Using the 20-year impacts reflects methane’s damages during the critical time intervals science has determined are necessary for averting the worst impacts of the climate crisis.

¹⁴ The Rhode Island General Assembly is currently considering legislation, S. 78 and H. 5445, that would increase the state’s goals to net-zero by 2050, further exacerbating this problem. The bills also make these targets binding and enforceable. Approving investments in Docket 5099 that expand the gas distribution system will make fulfillment of both the current and likely strengthened goals increasingly difficult.

¹⁵ Methane leaked into the atmosphere has an impact 86 times greater than CO₂ over the first 20 years.

Figure 4: Thermal Emissions Scenarios for Rhode Island



Electrification is Cost-Effective Today

Regulators and National Grid have long justified expansion of the gas distribution network by claiming electrification is too costly for consumers. In the case of Aquidneck Island, National Grid’s primary justification for a new energy facility relies upon demand growth from new gas-connected construction and conversions from delivered fuels like oil and propane. However, Acadia Center analysis demonstrates that weatherization and heating electrification are cost-effective solutions that decarbonize heating much more significantly than switching between delivered fuels and fossil gas.¹⁶ In some circumstances, even current “natural” gas customers would benefit from pairing well-timed weatherization and electrification investments.¹⁷ There is simply no reason to connect new customers, other than to further the Company’s financial interests in building the associated infrastructure and collecting new customer charges.

The PUC should also consider the actual, full construction costs of connecting a new gas customer and installing new gas appliances when comparing the costs of installing electric heat pump appliances. The current approach

¹⁶ Acadia Center [Clean Heating Pathways](#) Report

¹⁷ In the case of a representative home with older gas furnace and air conditioning equipment, weatherization and electrification may yield cost savings, particularly when eliminating a separate monthly gas customer charge and predicted increases in gas supply costs.

often hides these per connection costs. If customers were required to fund or finance these gas connection costs directly, as they do with most heating electrification costs, many more would avoid gas connections entirely.

Residential Gas Use is a Public Health Issue

The use of fossil gas as a heating and cooking fuel in our region’s buildings must end for the region to achieve important health, equity, public safety, and environmental goals. Multiple studies^{18,19} show that gas cooking leads to harmful concentrations of indoor air pollutants like nitrogen dioxide, carbon monoxide, and even formaldehyde. Younger children are particularly at risk from these air pollutants as gas cooking has been repeatedly linked to higher incidences of asthma²⁰ and heart disease²¹. This indoor air pollution is a particularly salient concern in environmental justice communities because living spaces are typically smaller, poorly ventilated, and residents are also burdened by poor outdoor air quality²²—so families never get a break.

In addition to the well-understood health risks from fossil fuel emissions, National Grid’s gas expansion plans also subject Rhode Islanders to significant noise and air pollution associated with excavating roads, installing pipelines, repaving streets, and the associated emissions from construction equipment and traffic disruptions.

Gas is a Significant Public Safety Risk

In its motion objecting to Conservation Law Foundation’s intervention, the Division of Public Utilities and Carriers claimed “the proposed ISR plan is dedicated to spending on gas distribution infrastructure with the aim of reducing the chances of incidents such as the 2018 Merrimack Valley gas explosions, Rhode Island’s 2019 Aquidneck Island outages, or isolated home explosions like those that occurred in Rhode Island in the late 1990s prior to the initiation of the annual ISR plan. When proposed investments and spending are found to be ‘reasonably needed to maintain safe and reliable distribution service over the short and long term,’ the Commission must approve the proposed plan.”²³

Much of the FY 2022 Gas ISR Plan, and in particular the investments related to Aquidneck Island, are not “reasonably needed to maintain safe and reliable distribution service” to existing customers, but rather serve to expand distribution infrastructure to connect new customers. As Acadia Center has demonstrated in its Aquidneck Island Alternatives Analysis included as Appendix 1 below, improving safety and reliability can be met by weatherization and electrification investments.

¹⁸ Zhu, Dr. Yifang, Rachel Connolly, Dr. Yan Lin, Timothy Mathews, Zemin Wang. “Effects of Residential Gas Appliances on Indoor and Outdoor Air Quality and Public Health in California.” *UCLA Fielding School of Public Health Department of Environmental Health Sciences*. April 2020. <https://coeh.ph.ucla.edu/effects-residential-gas-appliances-indoor-and-outdoor-air-quality-and-public-health-california>

¹⁹ Seals, Brady Anne, Andee Krasner. “Health Effects From Gas Stove Pollution.” *Rocky Mountain Institute, Mothers Out Front, Physicians for Social Responsibility, Sierra Club*. May 2020. <https://rmi.org/press-release/health-air-quality-impacts-of-cooking-with-gas/>

²⁰ Lin, Weiwei, Bert Brunekreef, Ulrike Gehring. “Meta-analysis of the Effects of Indoor Nitrogen Dioxide and Gas Cooking on Asthma and Wheeze in Children.” *International Journal of Epidemiology* 2013; 42: 1724-1737.

²¹ Seals, *supra*.

²² Seals, *supra* and Zhu, *supra*.

²³ DPUC Objection to CLF’s Motion to Intervene. Pp 2-3. <http://www.ripuc.ri.gov/eventsactions/docket/5099-DIV-Objection%201-19-20.pdf>

In fact, approving investments that increase the number of gas facilities and pipes in and throughout our communities significantly increases public safety risks that cannot be fully mitigated. Safety incidents with widespread impacts can occur due to utility mismanagement and human error, as was the case in the September 2018 Merrimack Valley disaster, resulting in death, injuries, and over \$1.4 billion in total property damage. Even careful attention is not a failsafe preventative. A year after the Merrimack tragedy, at a time when safety standards would conceivably be at an all-time high, another operational error led to a gas leak on a section of gas infrastructure newly replaced because of the previous year's explosions.

Rhode Island thankfully avoided the same type of tragedy during the Aquidneck Island low pressure event, but fires and explosions were a real possibility. Besides these headline grabbing safety incidents there are dozens of smaller scale home and pipeline explosions due to gas every year, untold numbers of gas leaks, and difficult to extinguish gas-fed fires. These can occur because of aging pipeline infrastructure, or because of errors on the part of utility companies, contractors, and customers. When it is impossible to fully mitigate human error, is it responsible to proliferate such a dangerous fuel through our communities?

Gas connections to buildings are not a foregone conclusion. While buildings will almost certainly always be connected to the electric grid, 46 percent of buildings in Rhode Island are not connected to the gas distribution system²⁴ and should remain that way. While a long-term goal of Rhode Island should be to move all of those buildings to heating sources that enable true carbon neutrality, like electric heat pumps, we can start by agreeing that new gas growth is untenable and undesirable to meet state health, safety, and climate policy goals.

Capacity Vulnerability is Overstated

National Grid suggests that more gas infrastructure solutions are necessary to protect against upstream disruptions of gas supply from transmission entities. But as the federal and state investigations into the Aquidneck Island Gas Outage concluded, this risk is actually quite rare. It took the simultaneous occurrence of three significant disruptive events in order to temporarily disrupt gas supply to Aquidneck Island: 1) National Grid's demand for natural gas exceeded its contractual limitations negotiated with Enbridge, Inc.²⁵ 2) lack of attention to ensure the uninterruptible power system at the Providence LNG facility was operational²⁶ and 3) a programming error that caused an upstream valve to malfunction.²⁷ Each of these three mistakes were all fundamentally tied to human error—including two of which were under the direct control of National Grid—the same entity now requesting approvals for more gas infrastructure to manage.

The PUC should instead be more concerned about a different type of vulnerability related to the complexity of safe and timely service restoration in the event of a gas disruption. The Aquidneck Island outage demonstrated

²⁴ Rhode Island Heating Sector Transformation Report. Page 39.

²⁵ National Grid received advanced warning from Enbridge that delivery pressures could decrease in the event National Grid's gas demand exceeded their contractual quantities. U.S. Pipeline and Hazardous Materials Safety Administration Investigation. Page 6.

²⁶ The power system experienced an unexplained shutdown more than two months prior to the Aquidneck Island gas outage. The plant operators did not identify the root cause of the shutdown. Ibid, 6.

²⁷ This programming error occurred more than four months prior to the gas outage and remain unresolved during that time. Ibid, 6.

that even in the event of a non-catastrophic²⁸ system failure, the effort required to restore service is time consuming, labor-intensive, and intrusive. It took approximately a week to restore service safely to 7,000 customers, requiring extensive deployments of utility crews, first responders, and locksmiths at a significant financial toll.

Comparatively, while electric outages may be more frequent due to storm damage, National Grid is usually able to quickly restore service to thousands of customers at a time within hours of a reported outage.²⁹ This is not a criticism of National Grid’s diligent gas utility workers or a claim that electric utility workers do not face their own dangers when maintaining and repairing their system. Rather it is an acknowledgment that gaseous fuels create dangers that require attention to protect individual buildings and their occupants in addition to performing broader repairs upstream.

Is it prudent to continue to connect more customers to a network that has such a high potential for danger and requires such significant safety precautions in the event of an emergency—whether that infrastructure is affected by an upstream disruption, operational errors, contractor error, or even the casual bump of a snowblower?³⁰ The common risk factor is the widespread presence of a highly combustible fossil fuel and Rhode Island should start reducing its presence in our communities, not expanding it.

Relief from Duty to Serve

The Company often cites its “duty to serve” as a justification for expanding its gas customer base. However, as noted in the Aquidneck Island Long-Term Gas Study, there are exceptions to National Grid’s duty to serve: “In general, gas utilities have an affirmative duty to provide service to qualifying applicants in their service territories. In Rhode Island, the Company is required to furnish gas service to applicants under its filed rates. For both residential and non-residential applicants, National Grid is required to connect and service all customers that request gas service in Rhode Island, unless precluded by certain conditions, such as the incomplete construction of necessary facilities, insufficient supply, or considerations for public safety.”³¹

In the case of Aquidneck Island, National Grid has stated that at least two of these conditions may apply. First, National Grid claims it would prefer to cease operations at the Old Mill Lane LNG facility and that absent such a facility, piped gas supply to the area is insufficient to support current or additional customers in the event of a design day and design hour event. Secondly, because the Company prefers to close the Old Mill Lane facility, additional facility construction would be necessary to resolve the claimed concerns over insufficient supply. The significant public health and safety concerns of gas use satisfy the third condition that precludes additional gas connections. Given all three conditions for denying new connections are met, it is appropriate to institute a moratorium for Aquidneck Island, and arguably the entire state.

²⁸ Non-catastrophic in the context of major upstream equipment damage that could naturally delay service restoration. The impacts on affected residents and businesses were significant and painful but not the result of a pipeline explosion or other sudden, irrecoverable damage to equipment necessary to supply gas to Aquidneck Island.

²⁹ Most fossil fuel heating appliances, including gas furnaces, also require electricity to operate. Therefore, gas connections should not be viewed as a way to protect a customer against the occasional disruption of electric service.

³⁰ <https://local21news.com/news/local/snow-blower-strikes-gas-pipe-causing-explosion-inside-barber-shop>

³¹ National Grid’s Aquidneck Island Long-Term Gas Capacity Study. Page 20.

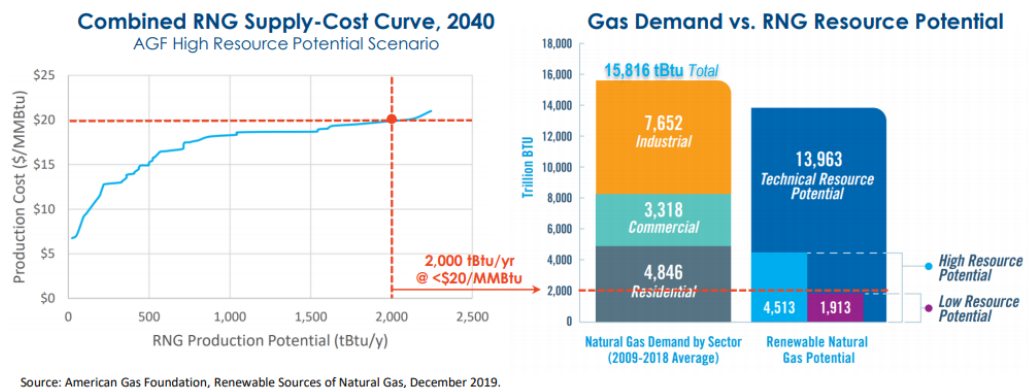
Promises of Hydrogen and Other Decarbonized Gases

National Grid often defends ongoing expansion of their gas network by claiming the pipes will one day accommodate increasing amounts of decarbonized gases—renewable natural gas or hydrogen³² for example. However, according to the American Gas Foundation, available supplies of decarbonized gases to displace fossil gas will meet only a tiny fraction of current usage. The total technical potential to produce renewable gas in their “High Resource Potential Scenario” is only 4.5 trillion Btu per year—compared to a total average annual natural gas consumption of approximately 16 trillion Btu per year, as demonstrated in Figure 5 below.³³ As the gas industry projects that only 2 trillion Btu could be produced for under \$20/MMBtu, through 2050³⁴, avoiding new gas customer connections in 2021 or 2022 will likely yield significant consumer benefits over the decades to come. It is prudent for the PUC to make decisions today that help Rhode Islanders avoid becoming dependent on a scarce resource that is difficult and very expensive to produce, even by the industry’s own accounting.

Figure 5: Renewable Gas Limitations as Presented in RI Heating Sector Transformation Meetings

Low(ish) cost renewable gas is in limited supply; price is likely to be quite high

- American Gas Foundation: up to 4.5 tBtu RNG supply by 2040 (High Resource Scenario)
 - Only 2.0 tBtu of this is below \$20/MMBtu (vs \$2.50 Natural Gas)
 - This is 13% of total gas use; less than half of current Residential use
 - Implies long-run RNG price may be well above \$20/MMBtu



³² The Rhode Island Heating Transformation Report, in footnote 68, notes that “the analysis of renewable natural gas provides a good proxy for a renewable hydrogen solution, since the projected cost of renewable hydrogen is generally within the range considered for renewable gas costs.”

³³ Rhode Island Heating Sector Transformation Presentation. February 13, 2020. Slide 21.
<http://www.energy.ri.gov/documents/HST/HST%20Public%20Workshop%202-13-2020%20Slides.pdf>

³⁴ Ibid.

The Rhode Island Heating Sector Transformation Report explained the limited potential of hydrogen as a gaseous heating fuel:

“Hydrogen is not a true ‘drop-in’ fuel since it differs from methane in ways that may require significant upgrades and investments to the existing gas infrastructure. This would likely involve equipment both in front of the meter (transportation and distribution pipes, and associated infrastructure) and behind it (internal gas lines, gas appliances). Thus hydrogen sacrifices the ability to continue using existing infrastructure, as well as the accompanying convenience and cost advantages.”

Blending more than a fractional amount of hydrogen into natural gas supply would require widespread pipeline network replacements and upgrades to end use appliances.³⁵ National Grid never speaks of these enormous requisite costs when discussing their plans to rely more heavily on hydrogen to meet decarbonization goals.

National Grid also frequently claims Naval Station Newport is very interested in building a hydrogen hub on or near their property and that replacing the Old Mill Lane facility with such a site would offer future fuel flexibility. A hydrogen facility may well make sense for the Navy: “Hydrogen may offer advantages in some particular applications, particularly for high-volume uses where dedicated infrastructure might be used, avoiding the need for broader upgrades. This could include large industrial applications, and also power generation, where hydrogen could offer an attractive way to store energy for use in thermal generators, to facilitate matching intermittent generation to load and providing ancillary services. The opportunities for hydrogen to address some of these industrial and power generation needs warrants further study.”³⁶

However, given the complications of using hydrogen instead as a gaseous distributed heating fuel across Aquidneck Island, it would be an inappropriate gamble of ratepayer funds to support a new LNG facility based upon the potential future synergistic opportunity to serve the needs of a single large cost-causing entity. The Commission should instead require National Grid to take the low-risk approach to resolve a relatively small current constraint problem across the whole of Aquidneck Island using proven, environmentally friendly solutions. National Grid Ventures is a more appropriate subsidiary to fund the development of a hydrogen hub.

Disallow Discretionary Investments in Gas Expansion to Limit Rate Impacts

As National Grid’s Docket 5099 filing notes, one of the motivations for proposed investments in the Gas ISR plan is “continuing to attract new residents and businesses to Rhode Island.”³⁷ It is also reasonable for the Commission to infer that the Company sees proposed investments like the “Southern RI Gas Expansion Project” as an opportunity to attract current Rhode Island residents and businesses to the Company’s gas distribution network. Clearly, many discretionary investments in Docket 5099 are designed to grow business rather than simply ensuring safe and reliable service for existing customers. Notably, the Company explains that “discretionary programs are not required by legal, regulatory code, or agreement, or a result of damage or failure, with limited exceptions.”³⁸

³⁵ The hydrogen blend wall is about 10% beyond which significant infrastructure upgrades would likely be necessary. Ibid, 20. (footnote 42)

³⁶ Ibid, 20. (footnote 43)

³⁷ Docket 5099 Gas ISR FY22 Plan, Testimony of Amy Smith & Nathan Kocon, Page 9 of 30. Bates 9.

³⁸ Ibid, Bates 39, Footnote 8.

Of the \$180.1 million total Gas ISR Spending Forecast, \$135.5 million is classified as “discretionary” including a \$19.4 million line item for the Southern RI Gas Expansion Project and the \$4.9 million requested to examine potential gas infrastructure options to enable new long-term gas growth on Aquidneck Island.³⁹ The Aquidneck Island “money allocated in the ISR will focus on site assessments, main extension, and other project development activities.”

During the PUC’s deliberations in 2020, commissioners noted the motivation to limit rate increases during Rhode Island’s continued economic recovery following the Covid-19 pandemic.

By limiting certain discretionary spending proposals in the FY 22 Gas ISR, the Commission can limit rate increases driven by National Grid’s gas expansion proposals. National Grid notes the proposed spending and rate changes filed in the FY 2022 Gas ISR would increase the typical residential customer’s annual gas bill by \$49.12. By rejecting, at a minimum, the Southern RI Gas Expansion request of \$19.4 million and Aquidneck Island Long-Term Capacity Options request of \$4.9 million, the PUC could reduce the typical gas customer’s projected rate increases by approximately 13 percent or \$6.38 annually. Even greater savings could be achieved by reducing or rejecting other discretionary spending items for FY 2022, all of which would also have some downward effect on the scale of road paving costs—another source of rate increases in the plan.

Acadia Center recommends the Commission protect ratepayers and disallow unnecessary discretionary spending proposed in Docket 5099 insofar as they are “not required by legal, regulatory code, or agreement, or a result of damage or failure, with limited exceptions” and serve to expand the gas customer base. Acadia Center supports efforts to replace the most severe leak-prone pipes as a prudent safety measure and interim step while the state, utility, and stakeholders develop a plan for a more complete wind-down of the gas distribution system. Avoiding these costs permanently and instead investing the funds in weatherization and all-electric buildings would yield even greater near- and long-term savings and reduce ratepayers’ risk of stranded gas infrastructure assets as Rhode Island moves closer to a net-zero emissions target.

Conclusion

National Grid’s plan to pursue gas network expansion on Aquidneck Island and throughout Rhode Island is painfully shortsighted. By allowing these discretionary investments the Commission and National Grid will be further locking in avoidable carbon emissions for decades to come, precisely at a moment where state, regional, and national climate goals are expected to tighten and necessitate a fossil fuel phase out. The question is not if but *when* ratepayers of the future would be asked to pay for incentives to transition today’s newly added gas customers away from the distribution network—essentially paying double the costs—as the gas business model becomes increasingly unsustainable. And what action will the Commission take today to avoid these unnecessary costs?

Due to the siloed nature of utility plans and filings, Rhode Island ratepayers are at greater long-term risk from PUC decisions that do not fully evaluate the comprehensive set of consequences resulting from a single docket filing. In the present case, National Grid’s proposal to make investments that enable more gas connections on Aquidneck Island would also lock customers into the higher projected decarbonized fuel costs of the future, millions of dollars in new distribution pipeline work and household connections. These cost factors are addressed in other dockets but can be predicated by decisions made in this proceeding, and vice versa. When evaluating

³⁹ National Grid FY 2022 Gas ISR Plan. Bates page 45 and Table 2.

proposals in the ratepayer interest, all parties should look beyond the immediate consequences of an investment decision and instead promote the best policies for ratepayers and the environment in the long-term.

Acadia Center appreciates and supports the comments of Chairman Gerwatowski during his Senate confirmation hearings that National Grid can utilize electric system assets to avoid building out gas infrastructure. This Gas ISR proposal is the first opportunity to pursue that dynamic and Acadia Center strongly encourages the Commission to initiate a docket, as Massachusetts has done, to wind down the gas distribution system. Moving forward, the Commission should also move towards more comprehensive and less siloed utility filings to better address fuel-neutral energy distribution needs, rather than treating electric and gas distribution as separate concerns. National Grid Group acts as one company and pays shareholder dividends as one company. Its subsidiaries should be treated as such to best protect the interests of all Rhode Islanders.

Acadia Center respectfully urges the Commission to reject National Grid's proposed investments in gas infrastructure that serve to expand the gas network in Rhode Island and instead direct the Company to pursue a purely non-infrastructure solution as a NPA for the Aquidneck Island gas constraint. The 2021-2023 SRP Three-Year Plan in Docket 5080 or the anticipated 2022 Annual SRP Report is likely the most appropriate forum for consideration of that approach.

Sincerely,



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Appendix: Alternative Solutions Analysis for Aquidneck Island

Aquidneck Island Gas Constraint

Demand-Side Solutions Analysis

December 1, 2020



National Grid's Gas Supply Constraint

In its recent analysis of long-term energy needs on Aquidneck Islandⁱ, National Grid largely ignores available clean energy strategies in favor of large-scale gas infrastructure spending to address a problem the utility could avoid completely by taking “no regrets” steps now. National Grid has already connected more Aquidneck Island customers to the gas network than can be responsibly supported per the negotiated terms of its transmission contracts.ⁱⁱ As a result, National Grid predicts there might currently be a constraint in delivering gas to customers on Aquidneck Island in the event of a rare “Design Day” event—described by the utility as a day with “an *average* temperature of -3 degrees Fahrenheit” and a likelihood of occurring once every 60 years.ⁱⁱⁱ

On such a “design day” event, the gas constraint would currently be 129 dekatherms/hour (Dth/hour) at peak demand. Despite a growing recognition of the climate, health, and safety dangers of natural gas, National Grid assumes gas expansion will continue over the next 15 years and that this occasional potential deficit could grow to 302 Dth/hour as a result. National Grid looks past proven and reliable solutions to address the near-term problem and instead presents a number of proposals to address the larger, avoidable longer-term problem. These proposals include various gas infrastructure projects ranging in cost from \$31 million to as much as \$257 million.^{iv} National Grid also studied a \$190 million “non-infrastructure solution”, which consists mostly of customer incentives—incentives that would most likely be ratepayer funds collected by the utility to then be distributed back to consumers for various demand-side measures like weatherization and electrification. The non-infrastructure solution, while the best value for consumers, is also sized to meet the larger predicted constraint—a problem that is completely avoidable by simply not adding gas customers over the ensuing 15 years.

In this brief, Acadia Center analyzes the potential for a smaller-scale non-infrastructure approach to address the current potential gas constraint issues. This “no regrets” solution addresses today’s problem and, coupled with smart policy decisions, will help prevent the long-term constraint concerns from ever materializing. This targeted non-infrastructure solution also makes buildings on Aquidneck Island healthier and more comfortable, creating a far better set of outcomes than National Grid’s proposed gas infrastructure investments. This smaller non-infrastructure approach is also unique in that it is completely scalable to address the long-term energy needs on Aquidneck Island unlike many of the gas proposals that would lock Rhode Island into stranded gas assets.

Acadia Center Recommendations

National Grid has identified a constraint issue that would be exacerbated by the Company allowing new gas connections on Aquidneck Island. Therefore, National Grid should stop pushing to worsen this potential problem. By electrifying new construction and helping delivered fuels and gas customers choose clean, electrified heating solutions instead of selling more gas, National Grid could both avoid creating or worsening this constraint issue, and begin the necessary transition away from fossil fueled buildings in order to meet Rhode Island’s climate targets. National Grid could use funds it would have spent on gas-related customer acquisition, marketing, and implementation efforts to instead help publicize opportunities for existing Aquidneck Island gas customers to reduce gas consumption. This effort could be considered as a non-pipeline alternative under the System Reliability and Procurement process, as a demonstration project, or perhaps even a carbon reduction performance incentive mechanism. National Grid could leverage existing energy efficiency program funds and

recent funding provided by the Office of Energy Resources for heat pump installations by extending incentive eligibility to existing gas heating customers.

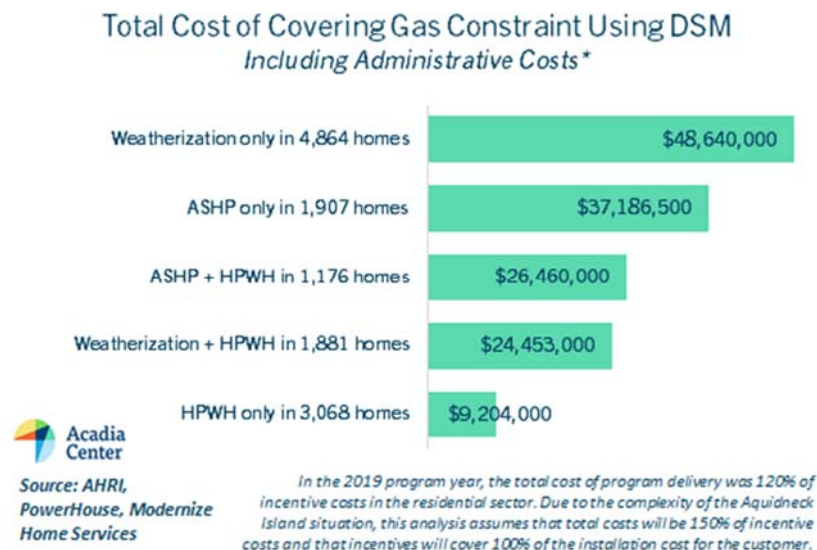
The residents of Aquidneck Island have good reason to support this approach and join jurisdictions around the world that are prohibiting fossil fuel use in new buildings and prioritizing the shift to energy efficient clean electric heating. As more buildings become free of fossil fuels, communities become safer, healthier, more resilient, and potentially more energy independent by adding solar arrays and energy storage systems. The General Assembly, Office of Energy Resources, Division of Public Utilities and Carriers, and Public Utilities Commission should also support this strategy as the most straightforward and economically responsible approach to permanently solve the identified gas constraint problem, reduce greenhouse gas emissions and deliver proven, reliable heating solutions at a lower cost to all Rhode Island ratepayers.

Acadia Center Analysis

Cost of Demand-Side Management

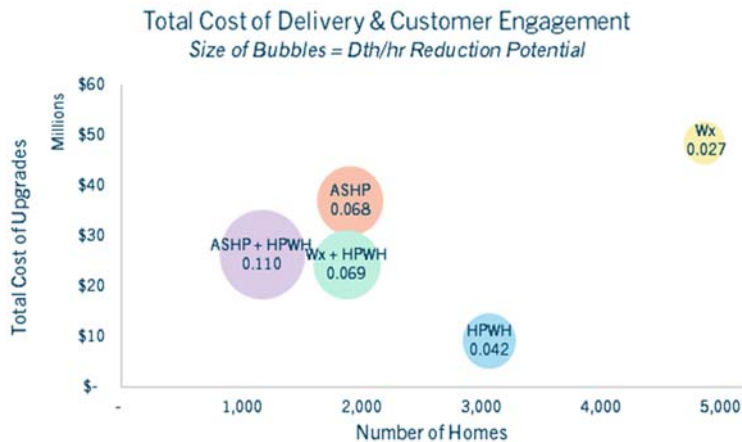
Acadia Center's analysis shows investment in demand-side management solutions would present a far better value for ratepayers than National Grid's preferred options. Acadia Center estimated equipment, installation, and program administration costs for common gas-fired heating and water heating appliances.^v Using conservative estimates Acadia Center found that certain combinations of demand-side tools would eliminate the current gas constraint for substantially less cost than required by any of National Grid's proposals for additional gas spending.

For example, National Grid's lowest cost proposal envisions operating the Old Mill Lane liquified natural gas site for at least the next 15 years at a cumulative cost of \$31 million. In contrast, Acadia Center finds that pursuing a strategy to displace gas-fired space and water heating in 1,176 homes could eliminate the current peak constraint claimed by National Grid for less than \$27 million, even when assuming very high administrative costs and full coverage of equipment and installation costs for consumers.^{vi} This scenario involves engaging the fewest number of buildings and it is reasonable to assume this effort could be concluded in the course of 3-4 years^{vii}, eliminating the need for the Old Mill Lane operation. This measure and other potential scenarios are provided in the figure below.



Strategic Considerations

As the below figure shows, converting gas-fired water heaters to heat pump water heaters would be the most inexpensive way to address the constraint overall. However, it could involve more administrative costs and uncertainty than other approaches due to the larger number of homes involved. Additionally, relying on water heater retrofits alone may not guarantee sufficient peak gas demand savings because the displaced gas appliance



may not have been running during the peak gas event. Displacing gas-fired space heating will more likely yield the desired gas savings as people are more certain to turn up the heat when it is cold than they are to run hot water.

Acadia Center finds that offering a free or steeply discounted ductless mini-split and heat pump water heater retrofit to just under 1,200 residential customers on the island would alleviate the current gas constraint with the fewest number of engagements. This constitutes about 12% of the homes on the island^{viii} that use gas as their primary heating fuel or 5% of all

homes, according to the 2018 American Community Survey.

Investments like heat pumps and water heaters also align with important state policy goals, like reducing greenhouse gas emissions, improving the quality of housing, economic development, and creating or sustaining local jobs in the energy efficiency and clean energy industry. Heat pump equipment can reduce emissions by up to 60% relative to gas equipment, even accounting for added electricity consumption. Pairing an ASHP with weatherization measures like insulation and air sealing can compound these benefits, reducing overall consumer energy needs, reducing ratepayer costs, and improving health and safety. Importantly, these investments in local jobs help to keep more money in the Rhode Island economy instead of being exported to fossil fuel producing regions of the country. Continuing to expand gas infrastructure provides no such benefit for the citizens of Aquidneck Island or the rest of Rhode Island.

For more information:

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ⁱ National Grid Aquidneck Island Long-Term Gas Capacity Study, September 2020.

ⁱⁱ *Infra*, page 25. The supply constraint is largely contractual in nature rather than physical or technical. As established by multiple investigations into the January 2019 gas outage, multiple upstream operational, managerial, and mechanical failures had to occur simultaneously in order for the low-pressure event experienced on Aquidneck Island to occur.

ⁱⁱⁱ *Infra*, Page 3. *Emphasis Added*.

^{iv} National Grid acknowledges its \$147 million cost estimate for an AGT pipeline reinforcement would increase by 75% to \$257 million if Massachusetts ratepayers do not split costs with Rhode Island ratepayers.

<https://www.nationalgridus.com/media/pdfs/other/openhousequestions.pdf>

^v Acadia Center analysis of nameplate ratings of common gas-fired heating and water heating equipment, along with Acadia Center's internal PowerHouse energy calculation tools. Data from the Air Conditioning, Heating, and Refrigeration Institute (AHRI) Directory of Certified Product Performance, [accessible here](#).

^{vi} Replacing one standard gas-fired water heater with a heat pump water heater reduces gas demand by 0.04205 Dth/hr and costs \$3,000, inclusive of program administration costs. Replacing one gas boiler with a system of ductless mini-split heat pumps reduces gas demand by 0.06765 Dth/hr and costs \$19,500, inclusive of program administration costs. Insulating and air sealing one gas-heated home reduces gas demand by about 0.02652 Dth/hr and costs \$10,000, inclusive of program administration costs. Program delivery costs were assumed to be 150% of incentive costs in the residential sector.

^{vii} Based on past heat pump deployment successes, Maine law establishes a goal of installing 100,000 heat pumps by 2025. National Grid could pursue a similar plan for Rhode Island, including Aquidneck Island.

^{viii} There are 24,639 housing units on Aquidneck Island, 9,639 (39%) of which report using gas as their primary heating fuel.