

National Grid is an electricity, natural gas, and clean energy delivery company serving more than 20 million people through its networks in New York and Massachusetts. The company is focused on building a path to a more affordable, reliable clean energy future through its <u>fossil-free vision</u>. It is focused on transforming its electricity and natural gas networks with smarter, cleaner, and more resilient energy solutions to meet the goal of reducing greenhouse gas emissions.

The Challenge

National Grid aims to achieve net zero greenhouse gas (GHG) emissions by 2050, including its own operations and emissions that result from the sale of electricity and gas to its customers. In addition to long-term solutions outlined in its fossil-free vision, one way the company is working to reduce methane emissions from its own operations is by deploying readily available solutions that can help them reduce planned venting operations associated with routine natural gas infrastructure maintenance and deactivation.

The Solution

National Grid chose to use the GoVAC[®] FLEX Pipeline Evacuation System by Onboard Dynamics. The system captures and recovers natural gas that would otherwise be released to the atmosphere prior to conducting routine gas main operations and maintenance. The system is powered by a small portion of the natural gas being recovered so no external power is required. Its compact size facilitates flexibility in transport and positioning at job sites, which is perfect for residential areas. Remote monitoring ensures reliable operation and responsive service. The state-of-theart telemetry enables near real time detailed environmental reporting that is accurate, encrypted, and secure. The goal of Onboard Dynamics is to support the natural gas ecosystem in reducing methane emissions safely and reliably through innovative and practical commercial solutions.





About the Project

The specific purpose of this project was to capture and recover natural gas out of a distribution main that was being taken out of service in a residential neighborhood in Massachusetts. A new distribution main had been installed running parallel to the old line. The goal was to evacuate the residual natural gas from the old line and then transfer it into the new line without releasing any methane emissions to the atmosphere, in preparation of the old line's decommissioning. "The digitization & near real-time reporting of the process data is key to the value proposition of this technology."

> David Lessard Engineering Manager – Innovation National Grid

The GoVAC FLEX is a self-contained system, easy to deploy at job sites and operates quietly. One of the more notable features about the GoVAC FLEX system is its environmental report generated from the telemetry designed into the system. The data is collected from the sensors, flow meters, and other devices during operation and is securely stored in the cloud that can be accessed to produce an accurate, meaningful environmental report when needed.



Secure Project Reporting

Each GoVAC FLEX system has a secure and unique connection to the Onboard Dynamics (OBD) Virtual Private Network (VPN). While the unit is running, the data is streamed to the Supervisorial Control And Data Acquisition (SCADA) system that is hosted on the VPN. If there is no network connectivity, the data will automatically buffer on the local unit until it can connect and securely transfer the data. Once the data is in the OBD system, only the client and OBD can access it. This ensures that the data used to generate the report represents the actual amounts that flowed through the system. This eliminates the possibility of a user making a mistake in recording data captured through the manual process of reading gauges. The ability to have this data collection automated even across multiple units is a huge benefit.



The Project Results

3100° of 4° pipe	GOVAC [®] PROJECT AND ENVIRONMENT	AL PERFORMANCE REPORT
Starting pressure: 53 PSIG	Project Information	
Ending pressure: Less than 1 PSIG	CompanyNational GridProject DateSeptember 20, 2022Project LocationImage: September 20, 2022	
1034 SCE of methane	Project Overview	
evacuated	Pipeline Length Pipeline Diameter	3100' 4"
FLEX W	Pipeline Starting Pressure	53 PSIG
15 minutes to complete the	Project Results	
project	Total Natural Gas (Methane) Evacuated	1034 SCF
	Final Inlet Pressure	1 PSIG
0 Lbs. of diesel consumption	Outlet Pressure from GoVAC	55 PSIG
	Compression Time to Evacuate	15 minutes
132 SCF of NG consumption	Environmental Impact in CO ₂ e	
	Fuel Consumption by GoVAC	
	Diesel Consumption	0 Lbs.
Emissions from GoVAC operations: 15 Lbs. CO ₂ e	Natural Gas Consumption	132 SCF
	Emissions from GoVAC Operations*	15 Lbs. CO2e
	Total Natural Gas Captured and Recovered**	1065 Lbs. CO2e
Total Natural Gas Captured and Recovered: 1065 Lbs. CO ₂ e	*Total CO ₂ e emissions from burning natural gas is 117 Lbs. per 1000 SCF (Source: EIA) ** Venting natural gas has 25X the Global Warming Potential (GWP) of CO ₂ (Source: EPA)	

ONBOARD

In Conclusion

The GoVAC FLEX system provided an efficient solution that did not require a complicated set up. The natural gas was captured and transferred to the new distribution main seamlessly allowing the National Grid team to decommission the old line safely without releasing methane to the atmosphere.

The technology gave National Grid an important tool to meet their environmental initiatives and create a best practice in minimizing methane emissions when taking gas infrastructure out of service. It also provided the means to accurately report on the total natural gas captured and recovered to fulfill current and future regulations and environmental initiatives. "The GoVAC solution provided our team with a versatile tool to efficiently drawdown our main & prevent excessive emissions."

> David Lessard Engineering Manager – Innovation National Grid

