CASE STUDY

Supporting Accurate Energy Demand Forecasts for the United Kingdom

National Grid, London, England

National Grid plays a pivotal role in the United Kingdom's energy industry. It owns the high-voltage electricity transmission network in England and Wales. It also owns and operates Great Britain's high-pressure gas transmission system.

By reliably moving energy from producers to local network operators, National Grid helps ensure end-users have the gas and electricity they need, 24/7. Actively working towards a net-zero future, the organization is upgrading its infrastructure and technology to support this goal.

> "We are very happy we chose DTN. We've never had a problem. Our account team has provided innovative solutions that link gas demand to the weather."
>
> Abbie Sheppard
> National Grid

> "It's been very simple and straightforward. DTN is very good at adapting to our frequently-changing processes."
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What they were up against.

To help ensure the country's nearly 68 million people have the gas they need for the next five days, National Grid requires the most accurate weather information possible. Temperature, wind speed, and wind direction inputs help determine likely domestic and commercial gas demands for local distribution zones.

When the contract with its previous weather vendor was ending, National Grid opted for other vendors to go to tender. They compared them based on weather data accuracy, the ease of making changes, and the company's professionalism and approach. They also ran a test scenario, examining the data at hourly and bi-hourly intervals. Ultimately, they selected DTN.

What we did to help.

National Grid uses highly-accurate raw weather data from DTN to create a composite weather variable (CWV) for its forecasts. An additional long-range CWV forecast capability was developed in collaboration with the World Climate Service, a DTN partner. This information is especially helpful in producing incentivized demand forecasts, where there is a day a head tolerance of just 9 million cubicmeters (m3). For two to five days out, the tolerance is 13.7 million m3.

To put it into perspective, load demand on a typical summer day is approximately 160 million m3. On an average winter day, it is roughly 290 million m3.

In terms of the individual local distribution zones, the tolerance is even less — allowing about a 1% variance from the predicted to the actual amount. If actual demand falls outside of National Grid's prediction, it faces hefty penalties from government regulators, not to mention negative feedback from people and businesses whose energy demands might not be adequately met. That's why the accuracy and flexibility DTN provides are extremely valuable.

What the impact was.

With help from DTN, National Grid can better support the current trend for increased gas demand. In addition, during the COVID-19 crisis, the link between weather and demand changed in a completely unprecedented way. Insights from the weather information vendor made it easier to adapt.

"DTN has been very adaptive to our evolving needs without there being a lot of processes to get things changed," said Abbie Sheppard, a senior energy forecaster with National Grid.

Sheppard explained that DTN has provided significant time savings. Previously, CWVs were calculated using manual processes that took up to an hour a day. Now, the task can be completed in 10 minutes or less. It also allows for more accurate demand estimates, eliminating the potential for human error. That equates to reduced risk and more time for staff to focus on other factors impacting gas demand.

As National Grid moves to "greener" operations, DTN weather insights will play a key role in supporting the changing grid.