Google Might Run the Power Grid More Efficiently: BNEF

2017-03-20 11:28:24.474 GMT

By Diego Marquina and Jahn Olsen

(Bloomberg) -- Renewables are causing headaches for power system operators – and increasing costs for consumers. The problem is grid constraints, and the conventional solutions are not very appealing: politically fraught market reform, or hugely expensive transmission infrastructure. Maybe less human involvement is part of the solution. Google's DeepMind recently announced they are exploring opportunities to collaborate with the U.K.'s National Grid.

Renewables disrupt efficient grid operation. Increasingly, certain parts of countries' grids are flooded with excess

(renewable) power. And there isn't enough transmission capacity to bring this power to where it needs to go. Because the whole system is in theory balanced and the power price is national, generators in undersupplied areas do not receive the market signals required for them to switch on. So, transmission system operators such as the U.K.'s National Grid and Belgium's Elia are increasingly having to step in and change where power is generated – and where it isn't – to get around grid constraints.

The cost of this process, known as congestion management, has skyrocketed. Congestion management costs in the U.K., for example, have more than trebled over the past five years to 463 million pounds ($575 million) per year, and in Germany they jumped to 255 million euros ($274 million) from 165 million euros each year.

Conventional solutions are costly. Dealing with congestion efficiently either requires investment in transmission infrastructure, or the removal of the barriers hindering market signals.

The best way to send the right economic signals that reflect constraints is through locational marginal pricing – having different power prices in different parts of the grid.

This is a politically unpopular mechanism, as it would see prices go up in zones of large demand – potentially industrial areas.

(Read BNEF's full EU Power Weekly here.)

The alternative is grid investment. But the costs are huge, as is the case for the bottleneck between Scottish wind farms and English demand centers. The 2.2 gigawatt HVDC cable currently being built there has an estimated cost of 1 billion pounds. Yet National Grid estimates as much as 8GW of additional transmission capacity could be required by 2030, on that particular border alone.

Less human involvement might be part of the solution.

Google's DeepMind recently announced they are exploring opportunities to collaborate with National Grid. It has been successful elsewhere -- DeepMind demonstrated its immense potential by reducing cooling costs in an already human- optimized datacenter by 40 percent.

Setting it loose on the extremely complex and quite probably over-engineered National Grid, with its many overlapping services and mechanisms, its rules of thumb and its safety margins, could provide novel ways to ensure system reliability cheaply and efficiently. DeepMind's CEO conservatively hinted that it might be able to save up to 10 percent of the U.K.'s energy usage without any new infrastructure. Step aside, humans.

To contact BNEF about this story:

Email support.bnef@bloomberg.net

To contact the editor responsible for this story:

Angus McCrone at amccrone1@bloomberg.net