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Home > Faculties > Faculty of Engineering and Built Environment > Electrical & Electronics > Articles > 315

2.2 ELECTRICAL, ELECTRONIC, INFORMATION ENGINEERING

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Electrical and Computer Engineering Commons

Analysis: community grids would allow for higher levels of renewable electricity microgeneration and empower local renewable energy projects

We rely on the grid to supply electricity when we need it, whenever we boil our kettle, cook our dinner and watch sport on TV. Electricity generation close to consumers such as roof-top solar panels, also known as microgeneration or distributed generation, as opposed to remote or central generation such as offshore windfarms, could disturb the local distribution of electricity to others. For example, the power flow in the local grid could reverse, which may cause issues in sub-stations.

To maintain undisturbed supply, grid operators such as ESB use statutory powers to limit the level of microgeneration in the area under their monopoly control and require approval for each connection of a microgenerator. In some countries, grid operators can temporarily reduce ("curtail") the output from solar panels remotely.

From RT? News in 2021, concerns over data centre demand on electricity grid

The CosyGrid research group in TU Dublin is currently developing solutions that instead delegate such powers, and corresponding obligations, to the communities that host microgeneration. It is power to the people. As long as these community grids adhere to a defined set of rules, referred to as disturbance-neutrality rules, they can operate autonomously from grid operators, installing microgeneration without requiring permission from or relinquishing control to grid operators.

The rules cover everything from installation to real-time conditions ("disturbance") under which power flows should change ("neutralise the disturbance"). It not only applies to roof-top solar, but to any locally hosted

renewable microgenerator technologies such as local community-owned wind farms or certain district heating technologies. It is a major step towards a truly de-centralised, de-monopolised, open market, renewable Smart Energy Grid, and towards the EU objective of increasing community engagement in energy transition.

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