Gas and Electricity Networks

The Maths Behind Them

**Nodes** - Points connected in a network.

**Edges** - Lines connecting nodes together.

**Network** - An interconnection of nodes and edges.

**Degrees** - The number of edges connected to a node.

**Hubs** - A node with a high degree.

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In gas and electricity networks.....

A node in power networks are points where pipes start or end, locations where pipe material or diameter changes, and entrance or exits of gas to the system. So they are basically distributive points.

Edges are pipelines and regulators. Since power can only move in a particular direction through lines, degrees show the direction and the amount of the flow of power in a network.

Hubs in power networks are where consumers and suppliers can exchange possession, which is why there are many lines connected to a hub.

Why involve maths?

Maths has many applications in such a network. Eg,

In case of problems in the pipelines like fires, we need network maths to efficiently resolve the problem with the least amount of disruption and damage. The knowledge of edges can be used here.

If any money is to be spent on developing pipelines to improve service, network maths can be useful to get the best value for the money spent. The knowledge of hubs and degrees can be used here.

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