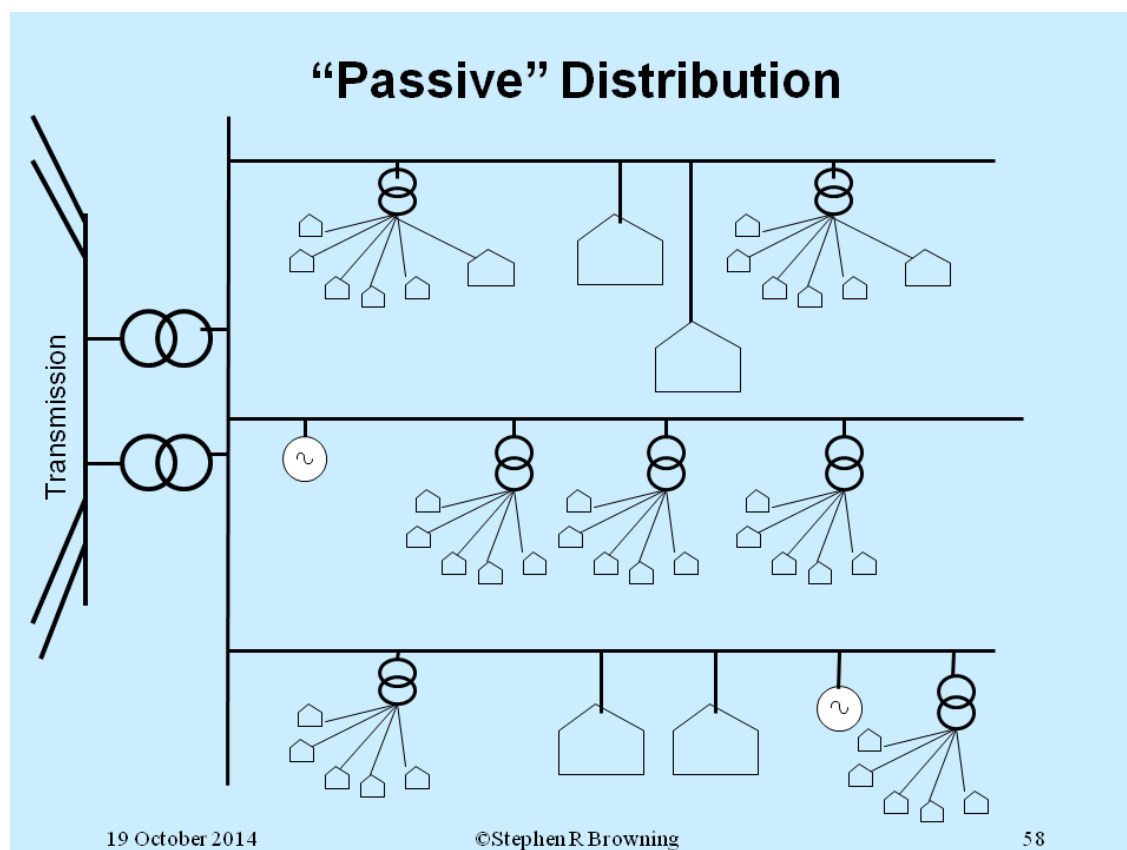


Distribution Configuration and Sizing

Conventional distribution system management is based on supplying demand to customers on a discrete network connected to a transmission grid supply point. Some conventional, observable system instruction following generation is also accommodated at the higher distribution voltages, able to regulate active and reactive power export (and reactive import) to meet system matching and transmission and distribution security requirements. Such generation is carefully controlled to avoid Power Quality issues at adjacent customer premises.

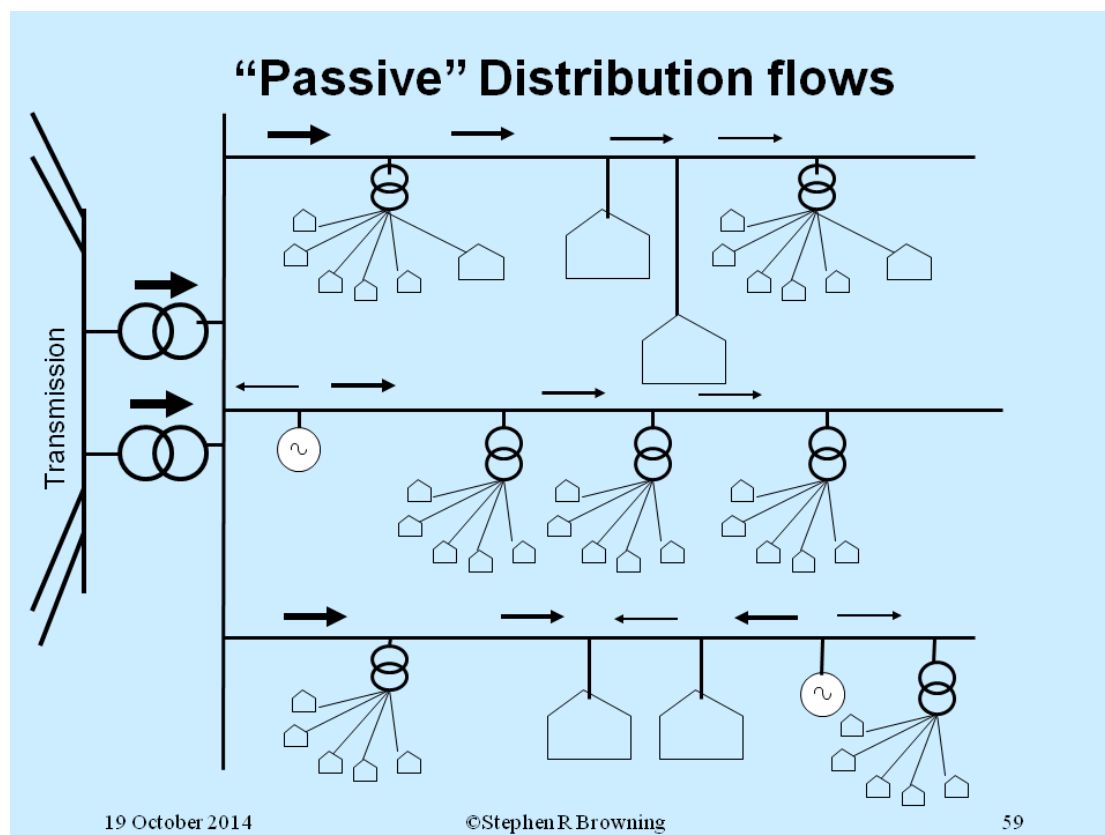


Design of the network is carried out by simple analysis of maximum and minimum demand - Max Gen and Min Gen - Min demand conditions to determine system capacity and quality. Because the generation is controllable, output can be intertripped or limited if necessary at low demand periods to avoid the need for major reinforcements to accommodate excess export at such times. This simple analysis will cover all expected loading conditions with supply transformer tap changing and generator control maintaining a valid voltage profile.

The loading pattern is predominantly a power flow from the grid supply point, decreasing by distance from that supply point with the voltage profile behaving in a similar manner. On feeders with generation, control is exercised to ensure security and quality is maintained. This design method means connections are geared to maximum demand conditions without any provision at the lower (domestic) levels

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for customer action to reduce the Peak loadings which only occur a few times a year. As a result, the systems are heavily sized, which does increase the customer connection charge; a large proportion of the final delivered cost of electricity.



GB domestic feeders at 240V are 60A/phase 14kW and 100A/phase 25kW.

Distribution Charging

In the UK, Transmission, Distribution and Balancing services Use of System charges are a fixed annual levy on the Suppliers and Generator Owners. For demand, it is based on supplier (wholesale) take at the three chargeable (Triad) system peaks; each Peak must be at least 10 days away from the others. The retail customer is billed via the supplier; they don't see the UoS element explicitly unless the tariff has a Standing Charge (p/day) separate from the Energy rate (p/kWh). Otherwise the UoS is recovered as a p/kWh figure rolled into the Energy charge. Thus the wires charges are correctly defined as an infrastructure (capacity overhead) charge, not as an energy based component.