

Electric Power Distribution

Distribution systems provide the network of electrical lines to deliver power to the individual consumers on a reliable basis. As electric power is generated and transmitted, it must be distributed to the ultimate retail consumer by the local utility.

Typically, the distribution utility will take delivery of the electric power at a delivery point substation. The substation could have a high voltage of 230kV or 115kV (transmission voltage). The low voltage could be 4kV, 12.5kV, 13.2kV, 13.8kV, or 14.4kV (distribution voltage). Lines carrying this power to the consumers can be overhead or, more and more frequently, underground.

The distribution utility provides the direct contact with the consumers by metering the use of power and billing the consumer. Also, the distribution utility is frequently the provider of energy services such as demand side management services, power quality equipment, and perhaps even loans for weatherization or energy efficiency equipment.

Sometimes a large industrial or commercial consumer may be connected directly to the utility's system at the distribution substation, either at the distribution voltage or in some cases at the transmission voltage. A transmission voltage connection usually requires the consumer to pay for and own the transformation equipment at the substation and allows a discounted rate for service to reflect the consumer's investment.

Customer service is imperative for the distribution utility. Consumers will call their local provider whenever there is an outage or problem, whether due to generation, transmission, or distribution problems. Power quality complaints go first to the utility even though the cause is frequently on the consumer's side of the meter. Keeping the consumers informed and their questions adequately answered is a major challenge for the distribution utility.

Source: Colorado Association of Municipal Utilities (CAMU)