Avery Substation and Transmission Line Project

Electric Distribution Feeder System

Xcel Energy's Distribution System Planning department is responsible for the design of the electric distribution feeder system. Major distribution feeder projects are developed for maximum cost effectiveness, reliability and safety. We achieve our objectives by developing long range electric load forecasts and using load modeling tools to properly determine capacity and voltage requirements, and placement of equipment to support the distribution system.

The following are some basic engineering design guidelines that apply to all areas of our distribution system.

- Voltage at the customer meter will be maintained within Colorado Public Utilities Commission guidelines, usually five or 10 percent of standard voltage, for residential or commercial respectively.
- Voltage imbalance on the feeder will be limited to three percent imbalance, which is defined as the maximum deviation from average divided by the average.
- Each feeder section shall be balanced so that the total neutral current at the feeder breaker is minimized.
- Distribution load is considered partially backed up, that is, for the loss of a single element the load can be fully backed up with field switching with the following exceptions:
  - Single bank substations loaded to 10 megavolt amperes (10 MVA) or less will have backup provided through a mobile transformer in lieu of field ties or a fixed bank.
  - Radial feeds with all overhead feeders.

- New substations will have a single transformer installed initially with additional transformers to follow as required to serve additional loads.
- Automated transfer procedures will limit transformer loss at multiple-bank substations to only momentary outages.

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