Chapter 3

Voltage Sags and Interruptions
Utility Distribution System Designs
Sources of Sags and Interruption
Estimating Voltage Sag Performance
Fundamental Principles of Protection
3.1 Utility Distribution System Designs

Four-Wire Multi-Grounded Neutral System
Three-Wire Delta Systems
European-style Distribution Systems
Radial Distribution Configuration/Structure
Four-Wire Multi-Grounded Neutral System
Three-Wire Delta Systems
European-style Distribution Systems
Radial Distribution Configuration/Structure
3.2 Sources of Sags and Interruption

Figure 3.1 Fault locations on the utility power system.
3.3 Estimating Voltage Sag Performance

General Procedure
1. The number and characteristics of voltage sags that result from transmission system faults.
2. The number and characteristics of voltage sags that result from distribution system faults.
3. The equipment sensitivity to voltage sags.
4. Evaluate the economics of different solutions that could improve the performance, either on the supply system or within the customer facility.
3.3.1 Area of Vulnerability
3.3.2 Equipment Sensitivity to Voltage Sags
3.3.3 Transmission System Sag
    Performance Evaluation
3.3.4 Utility Distribution System Sag
    Performance Evaluation
• Equipment sensitive to only the magnitude of a voltage sag
• Equipment sensitive to both the magnitude and duration of a voltage sag
• Equipment sensitive to characteristics other than magnitude and duration
Thank you~