IMEA
INDIANA MUNICIPAL
ELECTRIC ASSOCIATION

Safety Message of the Day for IMEA Members

Capacitive Dangers / Risks in High Voltage Cables

- Charging Current

The capacitance causes the cable to draw a charging current (capacitive reactive current) even when there is no load connected.
This can increase the current in the system and must be accounted for in design and protection.
Large charging currents may stress transformers and equipment.

- Voltage Stress and Overvoltages

Sudden disconnection or switching of HV cables can cause transient overvoltages due to the energy stored in the cable capacitance.
These overvoltages can damage insulation, leading to failures.

- Partial Discharges

High electric fields at the insulation boundaries can cause partial discharges (localized dielectric breakdowns).
Over time, this degrades cable insulation and can cause breakdown or faults.

- Resonance and Harmonics

Cable capacitance combined with inductances in the system can cause resonance conditions.
This can lead to voltage spikes and harmonic distortion, which stress the network.

- Safety Hazards on Fault

In case of faults, capacitive currents can continue to flow, causing electric shock risks or unexpected energizing of parts.