Meter Arc Flash Hazard
Just the Basics

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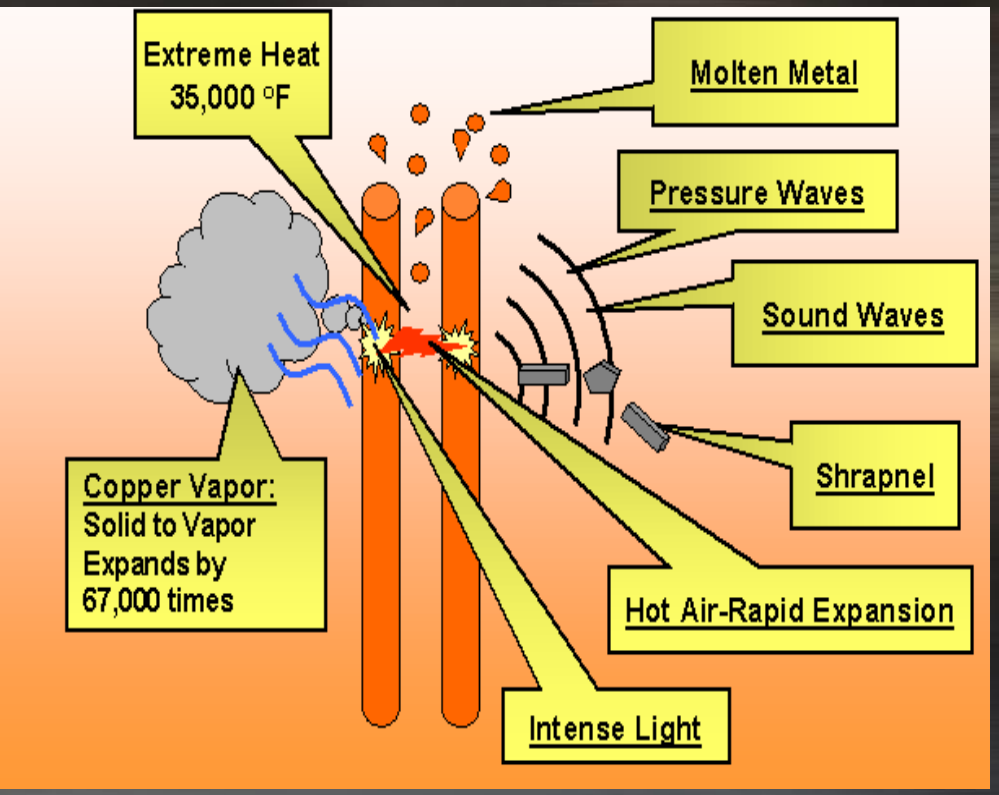
What is an arc flash?

A sudden release of energy through the metal vapor when a failure occurs in a charged conductor's insulation

Picture credit: Schneider/Square D Corp.
Source: Arc Flash Awareness : Information and Discussion Topics for Electrical Workers, 2007
Department of Health and Human Services

Introduction



An electric arc is caused by:

- Internal fault
- Bad connections, hot spots, lack or inadequate maintenance.
- Presence of birds or rodents inside switchgear
- Moisture or dust on an insulating surface
- Mechanical failures

Arc Flash Hazard Mitigation

- Reengineer the application
- Personal protective equipment
- Electrical safety training/safety procedures
- Generic hazard studies based on service voltage and KVA rating
- Meter installation type
- Work practices

Arc Flash Hazard Mitigation

Complicating factors

- Continuity of service
- Meter and socket designs
- Service types, connections and voltages

Resources

- NFPA 70E – Standard for Electrical Safety in the Workplace 2012 edition
- IEEE 1584 – IEEE Guide for Performing Arc Flash Hazard Calculations
- OSHA Publication 3075 – Controlling Electrical Hazards
- IEEE Std 399 – Recommended Practice for Industrial and Commercial Power System Analysis

Not much specific to revenue metering

Heat Energy Equation

Heat Energy = $K * I^{2} * t/d^{2}$ (or d^{3})

Where:

I = arcing current

t = duration of the exposure

d = distance from arc

Heat Energy Equation

Heat Energy = $K * I^2t/d^2$ (or d^3)

So where is service voltage and KVA rating in this equation?

Addressing the Total Hazard

Is heat the only hazard?

- pressure wave
- flying parts
- molten metal
- toxic gases
- bright light