Arc Flash Studies

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Update on Arc Flash Studies

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Low-Voltage Arc Flash Studies

• An initial arc flash exposure analysis is required for all work on low-voltage equipment that requires working on, or in close proximity to, energized parts. Western Area Power Administration (WAPA) uses EasyPower to conduct the arc flash hazard analysis.

• The arc flash hazard assessment shall be performed by a qualified and trained engineer. The analysis shall determine the level of exposure in calories per cm² at a distance of 18 inches.

• This may include work in energized panels or on rack-type breaker installations (basically this includes any work on equipment energized through the station service transformer).
Regulatory Requirements, Policies, and Standards

- OSHA 1910.269(I)(8), states, in part, to assess the workplace for electric-arc hazards and estimate the available heat energy.
- NFPA 70E-2017, states, in part, that incident energy analysis shall be updated when changes occur, as well as reviewed for accuracy at internals not to exceed five years.
- NFPA 70-2017 (NEC), Article 110.16, identifies the requirement for labeling.
- Department of Energy and WAPA Standards identify and document requirements to address arc hazards:
  - WAPA’s Power System Maintenance Manual – documents the requirement to update studies and keep them current.
Methodology

• WAPA personnel will visit each site, identify equipment, and perform the studies on the AC and DC Low Voltage Systems (50 – 600 Volts)

• The analysis will cover, but is not limited to, distribution circuits, switchgear, panel boards, battery chargers, DC panels, Battery system, and protection and controls equipment

• The studies will be completed and modeled in EasyPower and the field information will be recorded in official drawings

• Labels will then be printed and taken to each site and placed on the equipment included in the study
Results (Example of Label)

<table>
<thead>
<tr>
<th>Distance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2' - 0&quot;</td>
<td>Flash Hazard Boundary</td>
</tr>
<tr>
<td>2.3</td>
<td>cal/cm² Flash Hazard at 18 Inches</td>
</tr>
<tr>
<td>#1</td>
<td>PPE Level</td>
</tr>
<tr>
<td></td>
<td>FR shirt and FR pants or FR coverall</td>
</tr>
<tr>
<td>0.48</td>
<td>kV Shock Hazard when cover is removed</td>
</tr>
<tr>
<td>3' - 6&quot;</td>
<td>Limited Approach</td>
</tr>
<tr>
<td>1' - 0&quot;</td>
<td>Restricted Approach - Class 00 Voltage Gloves</td>
</tr>
<tr>
<td>0' - 1&quot;</td>
<td>Prohibited Approach - Class 00 Voltage Gloves</td>
</tr>
</tbody>
</table>

Equipment Name: PNL-3  (Fed by: BL-2)  [Date of Study]
Funding Mechanism

• OM&R exhibits for specific substations for each customer are scheduled to be revised this year to include study costs

• Funding agreements will be produced for each customer, if the OM&R exhibit for that specific substation is not scheduled to be revised this year
Questions
Contact Information

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