Electrical Safety Program
Appendix A-Task Procedures (Risk Assessment)

As required by the latest codes and standards, risk assessments shall be performed in this facility prior to starting work. In addition to any protective measures determined necessary by the results of the risk assessment, the following procedural requirements have been determined for all qualified electrical workers.

Opening Hinged Doors on MCC, Disconnects, and Panelboards

The following steps shall be taken prior to every time a hinged cover is opened on an electrical enclosure with energized conductors with a nominal voltage above 480 Volts (MCC bucket, Panelboard, control panel).

1. Arc flash PPE (including leather protectors) that meets the requirements of the warning label or the categories method shall be worn as intended (face shields in their correct position, shirts buttoned at sleeves and around neck, balaclavas applied, etc.).
2. Barricades (or attendant) shall be placed at a boundary that is either at the limited approach or the arc flash boundary (whichever is greater).
3. If the restricted approach boundary is to be crossed, insulated gloves with leather protectors are to be worn.
4. Area is inspected to ensure that there are no unexpected hazards such as unqualified workers in the area, standing water, or trip hazards.
5. The hinged cover shall not require excessive force to open. If excessive force is required, all conductors within the enclosure shall be de-energized prior to opening.
6. The enclosure shall not be left unattended while opened. The qualified electrical worker shall not walk further than 20 feet from the open enclosure (or line of sight).

Inserting Plugs into Welding or Temporary Receptacles

The following steps shall be taken every time a plug is inserted into a welding or temporary receptacle rated at above 480 Volts.

1. Plug shall be inspected for moisture, contaminants, or defects. If moisture, contaminants, or defects exist, it shall either be cleaned or removed from service prior to use.
2. Conductor leading from plug to device requiring power shall be inspected for any defects in insulation. If defects exist, the conductor shall be replaced before the device may be used.
3. Receptacle shall be inspected for any contaminants or defects.
4. If local disconnect exists, this disconnecting means shall be opened prior to inserting the plug into the receptacle.
5. Insulated gloves and leather protectors shall be worn if a local disconnect is not installed feeding the receptacle device.

Accessing Distribution Transformer Areas

The following procedures will be required when work is performed within 20 feet of areas containing distribution transformers with exposed energized components.

1. An arc flash suit (rated at least 40 cal/cm^2 shall be worn prior to exposing any energized conductors.
2. Only qualified electrical workers should ever enter these areas.
3. Area shall be visually surveyed prior to entering these areas to ensure that no unusual circumstances are present such as standing water or other circumstances that may increase the risk.
4. A second qualified electrical worker shall be present at all times when one or both qualified electrical workers are within 20 feet of exposed energized conductors.
5. All switching operations within these areas shall be considered high risk as exposed energized conductors are present. Arc flash PPE shall be worn for these operations.

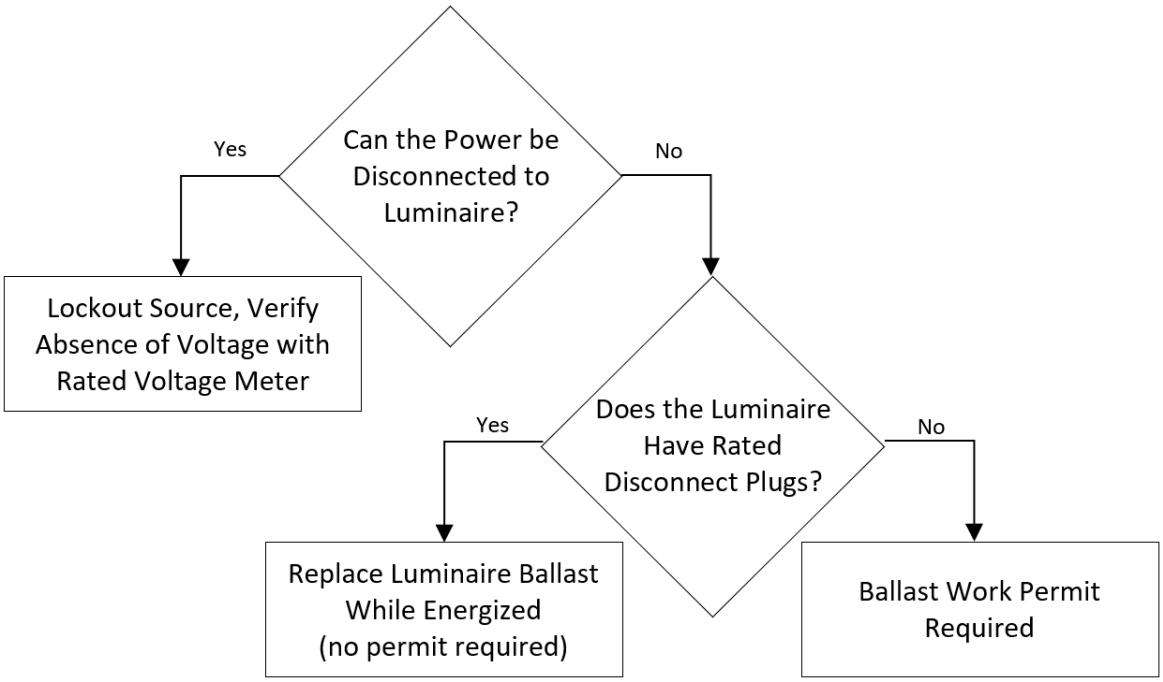
Racking in/Racking Out Breakers

The following procedures will be required when racking in or racking out a breaker:

1. Prior to racking in a breaker, a continuity test shall be performed between the lugs on the line side and load side of the device prior to reinsertion.
2. The preferred method of racking a breaker is using either the racking robot or a remote racking method.
3. If remote racking method is not available due to equipment design, the arc flash suit (rated at least 40 cal/cm^2) shall be worn for racking even if the racking allows the front paneling to remain in place.
4. For all tasks requiring racking of breakers without remote racking option or front paneling in place, the upstream disconnect shall be opened prior to racking.

Ballast Risk Assessment

Only Qualified Electrical Workers shall perform ballast replacement. The following flowchart demonstrates the thought process for changing a ballast on an overhead luminaire:



The following procedures will be required when replacing or servicing ballasts on overhead luminaire fixtures:

1. If energized components are to be exposed, upstream disconnect shall be opened and LOTO procedures followed (depending on equipment design) prior to work.
2. If ballast disconnect plugs exist (rated disconnecting plugs) no additional PPE or permits are needed for replacing ballast.
3. If upstream disconnect cannot be opened due to equipment design or due to criteria allowing for energized work, an Energized Electrical Work Permit shall be completed and submitted to management prior to work. Cotton clothing shall be worn with insulated gloves, safety glasses, leather protectors, and hearing protection. Rated insulated tools shall be used for the task. Area shall use a barricade or attendant to limit access to area.

Switching Operations

All work requiring 'Change of State' work shall require the following risk assessment procedure to be performed and implemented by the worker. If the condition of the equipment disconnect is compromised (such as visible evidence of deterioration, gaps in protective covers, or exposed conductors), an upstream disconnect shall be identified and utilized.

Task	Additional Procedures
Disconnect rated from 0 amps – 100 Amps	1. Stand to side of enclosure and look away 2. Take a deep breath inward
Disconnect rated from 101 Amps – 400 Amps	1. Stand to side of enclosure and look away

	2. Take a deep breath inward 3. PPE as determined by the warning label (or the PPE Category method in NFPA 70E Table 130.7(C)(15)(a)) is required if equipment has visible evidence of deterioration, gaps in protective covers, or exposed conductors
Disconnect rated from 401-4000 Amps (480 or 240 Volt)	1. Downstream disconnects and loads shall be turned off if possible 2. Take a deep breath inward 3. 8 cal/cm^2 AR shirts and pants with leather protectors, face shield, and balaclava shall be worn 4. Hot stick shall be used (if equipment design allows) 5. Remote switching shall be used (if equipment design allows) 6. Class 00 insulated gloves shall be worn
Disconnect rated from 600 Volts -17 kV	1. Downstream disconnects and loads shall be turned off if possible 2. Take a deep breath inward 3. 40 cal/cm^2 Arc Flash Suit shall be worn 4. Hot stick shall be used (if equipment design allows) 5. Remote switching shall be used (if equipment design allows) 6. Class 2 insulated gloves shall be worn