


**UNIVERSITY OF TOLEDO
FACILITIES AND CONSTRUCTION**

Section:	Administrative	Procedure Number:	ADM-45
Subject:	Shutdown Procedure for the Health Science Campus Main Substation	Effective Date:	March 1999
		Revised Date:	December 2019
Facilities Officer:		Reviewed Date:	February 2023

Standard Operating Procedure

Shutdown procedure for the Health Science Campus main substation.

Purpose

This policy will provide the guidelines for operating procedures and notification required for routine shutdown or emergency condition at the Health Science Campus main substation.

Procedure

For routine shutdown, the electrical manager will, prior to entering the substation.

	<u>Phone</u>	<u>Radio</u>
First Energy (Emergency)	800-433-8445	
First Energy Set-Up (Pre-arranged outage)	800-433-8446	
Health Science Campus Security	383-2600	
Electrical Systems Manager (Doug Queenan)	383-5499 419-350-4778 (cell)	
Central Control	383-4298	223 or 230

In the event of an emergency notify:

Health Science Campus Security	383-2600 (Initiate Code "Copper" electrical)
N.O.D.C. Ethel Hierholzer	Office: 419-381-3016 Cell: 419-343-2487
Northwest Psychiatric Hospital – Tim Lanning	Office: 419-392-9261 Cell: 419-410-0293

The main Health Science Campus substation contains the following:

1. Controls and equipment for 69KV primary Edison loop from Vulcan and Gould substations.
2. Switchgear Vault #1 (North) provides 12,470 V distribution for:
 - a. Teaching Hospital feeder (D)
 - b. Medical school feeder (B)
 - c. Secondary bus tie
 - d. Dana/CAP/RHC/Collier/VA/GMC feeder (F)
 - e. East Campus feeder (Tech Park, PH, NODC, Coroner, NBHS, GL) (H)
3. Switchgear Vault #2 (South) provides 12.47KV distribution for:
 - a. Teaching Hospital feeder #2 (C)
 - b. Medical School feeder #2 (A)
 - c. Dana/CAP/RHC/Facility Support Building, Collier- feeder #2 (E)
 - d. Secondary bus tie
4. Controls and equipment for power factor correction.
Toledo Edison will perform all 69KV switching operations after approval from Health Science Campus. Edison personnel will also be responsible for necessary switching to isolate the main transformer upon authorization from Health Science Campus personnel.

Health Science Campus personnel will be responsible for all 12,470-volt distribution switching operations.

1. Switchgear Vault #1 (North) contains the following line up:

Compartment 1 – OCB 6816 – Toledo Edison
Compartment 2 - Auxiliary components – Toledo Edison
Compartment 3 – Auxiliary/differential – Toledo Edison
Compartment 4 – M-Bus secondary breaker – Health Science Campus
Compartment 5 – Teaching Hospital feeder #1 breaker – Health Science Campus (D)
Compartment 6 – Medical School feeder #1 breaker Health Science Campus (HE, BHS, DH, MLB) (B)
Compartment 7 – Secondary bus tie breaker – Health Science Campus
Compartment 8 – Dana/CAP/RHC/Collier feeder #1 breaker – Health Science Campus (F)
Compartment 9 – Tech Park (H) – Powerhouse, NODC, Coroner, Redistribution, Dietary, NBHS)

Shutdown procedures Switchgear Vault #1 (North)

Compartments 1, 2 and 3 will be controlled by Toledo Edison.

1. Notify First Energy 800-433-8445/800-433-8446 and Health Science Campus Security (383-2600) upon entering vault.
2. Remove load from M-Bus by isolation Hospital feeder D #1 and opening secondary tiebreaker.
3. Electrically open M-Bus secondary breaker and rack breaker out from bus with hand crank.
4. Tag breaker and notify First Energy 800-433-8445/800-433-8446 of operation and condition.
5. Reset annunciator panel.

Compartment 5 – Teaching Hospital Feeder D #1 Breaker

1. First Energy 800-433-8445/800-433-8446 and Security Health Science Campus (383-2600) upon entering vault.
2. Notify Central Control (383-4298) and arrange for switching to remove load. Verify proper switching in Hospital.
3. Electrically open teaching Hospital feeder #1 breaker and rack breaker out from bus with hand crank.
4. Tag breaker and notify First Energy 800-433-8445/800-433-8446 of operation and condition.
5. Reset annunciator panel.

Compartment 6 – Medical School Feeder #1 Breaker

Before opening B Breaker and before closing B breaker the power factor correction unit #1 must be taken off line. Follow the de-energizing procedure listed in this policy to remove from service.

1. First Energy 800-433-8445/800-433-8446 and Health Science Campus Security (383-2600) upon entering vault.
2. Remove load by isolating feeder.
3. Electrically open Medical School Feeder B #1 breaker and rack breaker out from bus with hand crank.
4. Tag breaker and notify First Energy 800-433-8445/800-433-8446 of operation and condition.
5. Reset annunciator panel.

Compartment 7 – Secondary Bus Tie Breaker.

1. Notify First Energy 800-433-8445/800-433-8446 and Health Science Campus Security (383-2600) upon entering vault.
2. Verify that OCB 6816, OCB 6817 and OCB 6818 are closed and that the M-Bus in Vault #1 and the L-Bus in Vault #2 are energized.
3. At transformer #1 (North) move tap changer control from “Auto” position to “Manual” position and change mode switch from “Parallel” to “Independent”.
4. At transformer #2 (South) move tap changer control from “Auto” position to “Manual” position and change mode switch from “Parallel” to “Independent”.
5. Electrically open secondary bus tie breaker and rack breaker out from bus with hand crank.
6. Tag breaker and notify First Energy 800-433-8445/800-433-8446 of operation and condition.
7. Reset annunciator panel.

Compartment 8 – Dana/CAP/RHC/Collier Feeder #1 breaker F

1. Notify Central Control (383-4298) and arrange and verify proper switching at Kobacker, Dana, RHC, Collier to remove load.
2. First Energy 800-433-8445/800-433-8446 and Health Science Campus Security (383-2600) upon entering vault.
3. Remove loads by isolating feeder.
4. Electrically open Dana/CAP/RHC and Collier Feeder #1 breaker and rack breaker out from bus with hand crank.
5. Tag breaker and notify Western Dispatch/Western Set-up 800-433-8445/800-433-8446 of operation and condition.
6. Reset annunciator panel.

Compartment 9 – Tech Park – Powerhouse H Breaker

1. Notify First Energy 800-433-8445/800-433-8446 and Campus Police (383-2600) upon entering vault.
 2. Notify North Coast Behavioral (381-1881), NODC (385-0231), Power House (383-5343), and Coroner's Office (213-3900).
 3. Remove loads by isolating feeder.
 4. Electrically open Tech Park/Powerhouse feeder #1 breaker and rack breaker out from bus with hand crank.
 5. Tag breaker and notify First Energy 800-433-8445/800-433-8446 of operation and condition.
2. Switcher Vault #2 (South) contains the following line up:

Compartment 1 – Incoming line space – Toledo Edison

Compartment 2 - OCB 6817 – Toledo Edison

Compartment 3 – L-Bus secondary breaker – Health Science Campus

Compartment 4 – Dana/CAP/RHC/Collier/Facility Support Building feeder breaker E – Health Science Campus

Compartment 5 – Teaching Hospital Feeder #2 Breaker C – Health Science Campus

Compartment 6 – Medical School Feeder #2 Breaker A– Health Science Campus

Compartment 7 – Secondary bus tie connection – Health Science Campus

Compartment 8 – OCB 6818 – Toledo Edison

Shutdown procedure switchgear Vault #2 (South)

Compartment 1, 2 * 8 will be controlled by Toledo Edison.

Compartment 3 – L-Bus secondary breaker:

1. First Energy 800-433-8445/800-433-8446 and Health Science Campus Security (383-2600) upon entering vault.
2. Remove load from L-Bus by isolating teaching Hospital feeder C #2, Medical School Feeder A #2, Dana/CAP/RHC/Facilities Support Building feeder E and opening secondary tiebreaker (Vault #2).
3. Electrically open L-Bus secondary breaker.
4. Install motor into the elevating mechanism; operate the selector switch to “Lower”. Pull the clutch and operate motor. If motor fails to operate, remove motor unit and insert emergency hand crank and lower unit.
5. Tag breaker and notify First Energy 800-433-8445/800-433-8446 of operation and condition.
6. Reset annunciator panel.

Compartment 4 – Dana/CAP/RHC/Facility Support Building/Collier feeder breaker E.

1. Notify Central Control (383-4298) to arrange for operation. This breaker cannot be opened without prior approval from Power House and Maintenance personnel.
2. Notify First Energy 800-433-8445/800-433-8446 and Health Science Campus Police (383-2600) upon entering vault.
3. Arrange for load to be removed from Dana/CAP/RHC/Collier/Facilities Support Building feeder#2, Breaker E.
4. Refer to step 4, 5 and 6 for L-Bus secondary breaker.

Compartment 5 – Teaching Hospital Feeder #2 breaker C

Before opening C breaker and before closing C breaker the power factor correction unit #2 must be taken off line. Follow the de-energizing procedure listed in the policy to remove from service except use Power factor correction unit #2.

1. Notify First Energy 800-433-8445/800-433-8446 and Health Science Campus Police (383-2600) upon entering vault.
2. Notify Central Control (383-4298) and arrange for switching to remove load, verify proper switching in Hospital.
3. Electrically open teaching Hospital feeder C breaker.
4. Refer to steps 4, 5 and for Compartment 3 L-Bus secondary breaker.

Compartment 6 – Medical School Feeder A Breaker

1. Notify First Energy 800-433-8445/800-433-8446 and Health Science Campus Police (383-2600) upon entering vault.
2. Remove load by isolating feeder.
3. Electrically open Medical School Feeder A breaker.
4. Refer to steps 4, 5 and 6 for Compartment 3 L-Bus secondary breakdown.

Compartment 7 – Secondary Bus Tie Connection

1. Bus termination for cables from Vault #1 No Operations required.

Power Factor Correction Capacitor Units #1 (North) and #2 (South)

Prior to de-energizing either unit for routine service notify Jim Graff (419-466-1682), Edison Commercial Service (249-5610). In the event of emergency condition notify Toledo Edison Representative (249-5622) when unit(s) is off line. After emergency condition is corrected, notify the Edison Representative of time when unit went off line and when it was restored.

Shutdown procedures (Unit #1 (North) and #2 (South))

1. Notify and Central Control (383-4298) First Energy 800-433-8445/800-433-8446).
2. Operate main disconnect switch and lockout via Kirk key. Remove key and insert key into interlock on grounding switch #1. Do not operate switch for approximately 4 minutes. This pause will allow the capacitor to discharge to a safe voltage level. Tag main disconnect switch.
3. After 4 minutes, the interlock can be operated and grounding switch #1 can be closed. Remove Kirk key from interlock and proceed to grounding switch #2.
4. Insert Kirk key into interlock on grounding switch #2. Operate interlock and close grounding switch #2. Remove Kirk key from interlock and proceed to grounding switch #3.
5. Insert Kirk key into interlock on grounding switch #3. Operate interlock and close grounding switch #3. Remove Kirk key from interlock.
6. This key will operate the equipment cabinet doors and provide access in the interior components. CAUTION: 12,470 V is still present at the top of the main disconnect switch inside the equipment cabinet. Utilize extreme care and verify voltage condition with high voltage checker.

CAUTION:

Under no circumstance will any switching operations be performed without prior notification and authorization. At no time will switching operation be conducted by other than trained and experienced personnel. A minimum of two persons will be present during operations to ensure safety precautions are properly observed. Never conduct any operations with only one man in the substation.

Before re-energizing any of the distribution systems all parties should be notified.