



NORTHEAST PUBLIC POWER ASSOCIATION

2024 SUBSTATION I PROGRAM



**NEPPA Training Center
200 New Estate Road, Littleton, MA 01460**

Includes 4 Sessions

March 19 - 22

April 9 - 12

April 30 - May 3

May 21 - 24

SUBSTATION I PROGRAM

NORTHEAST PUBLIC POWER ASSOCIATION



Includes 4 Sessions

March
19-22



April
9 -12



April 30
- May 3



May
21-24

NEPPA's is pleased to offer the Substation I Program which is held in 4-day sessions 4 times a year. Participants will be expected to attend all sessions. Substation I is designed to be an introduction to substations including safety, design, operation, equipment and theory. Upon successful completion of the Program, students are awarded a Certificate of Completion.

In addition to in-class lecture, the Substation I Program incorporates hands-on application of concepts and testing, field visits and tours of different installations, and weekly testing including a final exam to demonstrate knowledge and comprehension of the course content. Each Friday of the session will be conducted virtually for review and testing.

WHO SHOULD ATTEND

This course is designed for:

- Lineworkers or operations employees
- Substation Technicians
- Employees or Supervisors transitioning from other departments.
- Engineers
- Construction Supervisors
- Project Managers

LEARNING OBJECTIVES

Upon completion of this four-week program, participants will be able to successfully:

1. Recognize safety hazards in a substation.
2. Demonstrate a foundational knowledge of how electricity is transmitted through substations.
3. Practice safely entering, exiting, and performing maintenance in a substation.
4. Apply concepts of the substation's role in a distribution system.
5. Identify and classify equipment found in a substation, including applicable safety precautions including PPE
6. Demonstrate an understanding of SCADA, as well as basic switching and tagging.
7. Ability to deenergize and reenergize a power transformer.
8. Recognize applicable standards, specifications, and regulations such as OSHA and the National Electrical Safety Code (NESC).

Northeast Public Power Association | 200 New Estate Road, Littleton, MA 01460 | P: (978) 540-2200 | www.neppa.org



AGENDA *Agenda details are subject to change*

Session I: Tuesday, March 19 – Friday, March 22, 2024

Day 1 (Basic Electricity & Mathematics for Utility Operations [BEM]) – (Prerequisite)

8:00 am Welcome & Introductions
 8:15 am Module 1: Basic Electricity
 9:15 am Break
 9:30 am Module 2: Basic Mathematics
 10:45 am Module 3: Electrical Safety
 11:30 am Lunch
 12:00 pm Module 4: Electric Power & Energy
 12:45pm Module 5: Power System Overview
 1:45 pm Final Exam & Practical
 2:30 pm Review Final
 2:45 pm Certificates of Completion
 3:00 pm Adjourn

Day 2

8:00 am Substation I Program Welcome
 8:30 am Types of Substations
 9:15 am Break
 9:30 am Substation & Arc Flash Safety
 11:30 am Lunch
 12:00 pm Introduction to SCADA
 2:00 pm Adjourn

Session II: Tuesday, April 9 – Friday, April 12, 2024

Day 1

8:00 am Welcome, Introductions & Recap
 9:00 am Major Substation Equipment:
 Power Transformers
 9:45 am Break
 10:00 am Power Transformers (cont.)
 11:30 am Lunch
 12:00 pm Major Substation Equipment:
 Circuit Breakers
 2:00 pm Adjourn

Day 2

8:00 am Major Substation Equipment: Relays
 9:45 am Break
 10:00 am Major Substation Equipment:
 Disconnectors, Instrument
 Transformers, Bus Bar, Surge
 Arresters

Day 3

8:00 am Switching & Tagging
 9:45 am Break
 10:00 am Introduction to the NESC
 11:30 am Lunch
 12:00 pm Introduction to Inspections
 1:00 pm Introduction to Test Equipment
 2:00 pm Adjourn

Day 4 (Virtual)

8:00 am Review the Week
 9:00 am Break
 9:15 am Week 1 Test & Review Results
 11:00 am Adjourn

Day 2 Continued:

11:30 am Lunch
 12:00 pm Hands-On Exercises and/or Testing
 1:30 pm Summary
 2:00 pm Adjourn

Day 3

8:00 am Hands-On Exercises & Testing
 11:30 am Lunch
 12:00 pm Field Visit & Tour
 2:00 pm Adjourn

Day 4 (Virtual)

8:00 am Review the Week
 9:00 am Break
 9:15 am Week 2 Test & Review Results
 11:00 am Adjourn

Session III: Tuesday, April 30 – Friday, May 3, 2024

Day 1

8:00 am Welcome, Introductions & Recap
Weeks 1 & 2
8:30 am Secondary Substation Equipment:
Voltage Regulation
9:45 am Break
10:00 am Secondary Substation Equipment:
Breakers
11:30 am Lunch
12:00 pm Secondary Substation Equipment:
Capacitors & Capacitor Banks
2:00 pm Adjourn

Day 2

8:00 am Auxiliary Substation Equipment:
DC Supplies (Batteries, Cells &
Chargers)
9:30 am Break
9:45 am DC Supplies (Batteries, Cells &
Chargers, cont.)
11:30 am Lunch
12:00 pm Hands-On Exercises and/or Testing
2:00 pm Adjourn

Day 3

8:00 am Hands-on Exercises and/or Testing
11:30 am Lunch
12:00 pm Substation & Battery Installation Tour
2:00 pm Adjourn

Day 4 (Virtual)

8:00 am Review the Week
9:00 am Break
9:15 am Week 3 Test & Review Results
11:00 am Adjourn

Session IV: Tuesday, May 21 – Friday, March 24, 2024

Day 1

8:00 am Welcome, Introductions & Recap
9:00 am Auxiliary Station Equipment:
AC Supplies/Transformers, Electrical
Panelboards, Lighting & Heating
10:00 am Break
10:15 am Introduction to Print Reading
11:30 am Lunch
12:00 pm Introduction to Print Reading (cont.)
2:00 pm Adjourn

Day 2

8:00 am Introduction to Print Reading (cont.)
9:45 am Break
10:00 am Hands-On Exercises
Students bring examples of diagrams
and layouts to review as a group

Day 2 Continued:

11:30 am Lunch
12:00 pm Hands-On Exercises (cont.)
2:00 pm Adjourn

Day 3

8:00 am Hands-On Testing
11:30 am Lunch
12:00 pm Field Visit & Tour
2:00 pm Adjourn

Day 4 (Virtual)

8:00 am Final Recap of Weeks 1 – 3
9:45 am Break
10:00 am Final Exam
11:15 am Certificates of Completion
11:30 am Adjourn

TESTING

Weekly Tests (20 Questions); Mid-Term Exam (25 Questions); Final Exam (50 Questions)

INSTRUCTORS

Tim Richardson, P.E.

Technical & Safety Trainer



Tim Richardson joined NEPPA in September of 2019 and has been an asset to the training team. Tim has a long history working in the electric utility industry, including as General Manager of Belmont Municipal Light Department from 1995 - 2007.

Most recently, Tim has worked as Principal of Fundy Power Services, LLC and at Consulting Engineers Group prior to that.

Tim brings a wealth of both technical and safety expertise to the organization and applies his expertise of both in an easy-to-understand and easy-to-learn approach.

Anthony Calascibetta, CUSP

Director of Safety & Training



Anthony is NEPPA's Director of Safety & Training. He has 40 years of Electrical experience and 25 years of Electric Utility experience. Starting out as a Lineworker, he moved to the Substation Division as a Lead Substation Technician.

He is proficient in relay testing, transformer testing, circuit breaker testing, and all aspects of wiring in overhead, underground, metering, and substations.

Anthony is an OSHA Authorized General Industry Trainer, and OSHA Authorized Construction Trainer.