

De-energized Testing

TEI works with you and your utility provider to coordinate all aspects of de-energized services for maintenance of the electrical distribution system.

NFPA 70B, the “Recommended Practice for Electrical Equipment Maintenance,” outlines the requirements for de-energized testing and servicing of electrical components, including both the tasks that must be performed and their frequency. These de-energized tests are a must, because they complement your energized preventative maintenance program and improve the overall reliability of your electrical system. Our specialized tools allow us to test circuit breakers, transformers, switchgear, and perform cable testing – all according to NETA standards. By comparing the current values against prior maintenance periods, skilled TEI technicians can help you predict and prevent failures.

Molded Case Breaker Maintenance Schedule: Feeder and Critical Control and Protection Breakers Maintenance or Test Recommended Interval

Maintenance or Test	Recommended	Interval Reference
Infrared Scan, While Loaded or Immediately Thereafter	Annually	NFPA 70B, 20.17
Mechanical Operation by Hand	2 Years	NFPA 70B, 13.10 and Table H.4(f) Annex I, Table I.1
Visual Inspection	3-6 Years	NFPA 70B, 20.10.2.4 Annex H.4F Table 1.1
Test Critical Breakers with Current Source 300% of rating: Test Fault Trip	3-6 Years	NFPA 70 B, 20.10 FIST 3-16 Annex I, Table I.1
Review Equipment Ratings	5 Years	NERC Planning Standard FAC-009-1

Leak Detection Testing

The Electrician, Inc helps you save money by detecting leaks in your compressed gas & air system.

Ultrasonic testing is a highly-effective tool to detect and identify the leaks in your systems that allow valuable gases and air to escape. Skilled TEI technicians will clearly denote all leaks and determine their respective sizes so calculations can be made to determine the payback for each repair, allowing you to prioritize which leaks are the most critical to fix. For companies using high cost fuel gases, this service is an easy way to reduce costs, and may decrease the safety risk of combustible gases leaking into your facility. The team at TEI will also work with you to determine if any energy rebates are available to offset some of the repair costs.

Transformer Testing

The Electrician, Inc evaluates your transformer to detect problems, then works to resolve those issues to protect your equipment.

Transformers rely almost entirely on the electrical properties of their windings to operate properly. It is critical to confirm that those electrical properties correspond to the design specifications, meaning the transformer can function as intended. Several testing procedures are available to accomplish this important task. For example, the transformer turns ratio test is able to detect shorts occurring between turns of the same coil, which may indicate inadequate insulation. DLRO testing is performed to measure low resistance and help identify resistance elements that have increased above acceptable values. Finally, the insulation resistance testing is used to verify the condition of electrical insulation. TEI technicians can perform all of these tests to ensure that your transformer is safe and reliable.

Power Quality Analysis Testing

The Electrician, Inc assesses your facility’s power quality to ensure your electrical system functions at optimum performance.

Without proper power, an electrical device can malfunction or even fail prematurely. It is important to understand variation in voltage, transient voltages, and harmonic content so you can determine how compatible your devices are with your facility’s power quality. TEI will document these power quality issues, review operational integrity or safety issues, and work with you to avoid future problems.

Earth Ground Testing

The Electrician, Inc will evaluate your electrical system to determine if it is properly grounded so that a utility overvoltage or lightning strike will find a safe path to earth.

Earth has an electrical property, conductivity (or low resistance), that is used in the electrical systems of your facility. Earth's resistance is the resistance of soil to the passage of electric current, and the earth is a relatively poor conductor; however, if the area of a path for current is large enough, resistance can be quite low and the earth can be a good conductor.

If there is an instance of overvoltage or lightning strike, you need to ensure that the current will find a safe path to earth. If the current does not find this path, or the ground cannot carry the fault current long enough, the result is potential damage to the equipment inside your building.

There are a few factors that can change the earth electrode requirements from year to year:

- A plant or other electrical facility can expand in size. Such changes create different needs in the earth electrode, and what was formerly a suitably low earth resistance can change.
- As facilities add more sensitive computer-controlled equipment, the problems of electrical noise are magnified. Noise that would not affect older equipment can cause daily problems with new equipment.
- As more nonmetallic pipes and conduits are installed underground, such installations become less and less dependable as effective, low resistance ground connections.
- In many locations the water table gradually falls. In a year or so, earth electrode systems that were effective may end up in dry earth of high resistance.

These factors emphasize the importance of a continuous routine of earth-resistance testing, per NFPA 70B recommendations. It is not enough to check the earth resistance only at the time of installation.

Insulation Resistance Testing

The Electrician, Inc will give the wiring between your utility service transformer and your switchgear a health check.

Testing the wiring / cables between your utility service transformer and your switchgear termination should be part of any electrical predictive maintenance program. Improper installation, or harsh environments can cause damaged or deteriorated insulation, and because of that safety and power reliability can be an issue. The cables are tested with an insulation resistance test using a test meter such as the AEMC Model 5050 Megohmmeter. The test procedure serves as a baseline analysis where future test results can be compared, and assures that cables have not been damaged during install, harsh environments, or rodents.

TEI TEGG Services Technicians have been trained on the use of this equipment and proper testing procedures, so they understand that test results:

- are affected by temperature and humidity
- must be property normalized in order to complete a comparative analysis of past test results.

Catastrophic failures with this segment of your electrical system can leave your facility down for several days because of possible damage to the utility transformer and switch gear components.