

# Engineering & Integration | Power System Analysis & Design



Get experience, knowledge and skills every time you partner with  
**Tri-City Electric Co.**

Just as the integrity of your power and control systems are critical to the productive and dependable operation of your business, so is the integrity of the contractor performing the work on those systems. You need a contractor that gives you confidence they will have the right people, solutions and knowledge. Since 1895, Tri-City Electric Company has been getting the job done for our customers. You can depend on Tri-City Engineering & Integration to do the same for you.

**CONFIDENCE DELIVERED.®**



**Tri-City Electric Co.**  
Since 1895

## Power System Analysis and Design

Tri-City Electric Company's Engineering & Integration division provides power system analysis and design solutions you can depend on. Power system analysis and design enables efficient, economical use of power by using calculations and modeling to analyze or design power systems. This means verifying the adequacy of the power distribution system and its components, which is the basis for improving system performance and power quality, reducing operating costs and providing a reliable power system.

### Industrial / Commercial System Design

Tri-City Electric Co. can provide complete electrical engineering design services for new construction, expansion, and major renovation projects. We can also develop project engineering and construction specifications.

### Short-Circuit & Coordination Analysis

Short-Circuit analysis calculates the magnitude of prospective fault currents throughout the power system. These calculations determine the minimum required interrupting and withstand ratings for power distribution equipment. The short-circuit analysis provides information to coordinate protective devices setting and ensure a balance of selective fault clearing and equipment protection. Tri-City Electric Co. can perform short-circuit analysis using complex-impedance, ANSI or IEC calculation methodologies.

### Load Flow Analysis

Load flow analysis evaluates the performance of the power system during steady-state operating conditions. This can calculate power system losses, optimal transformer tap settings, and capacitor sizing and location for numerous operating configurations and contingencies. It is a valuable tool for planning system expansion and equipment loading.

### Arc-Flash Hazard Analysis & Mitigation

Arc-flash hazard analysis is an important part of any organization's electrical safety program. The analysis determines the flash protection boundary distance and PPE required to perform work on energized equipment. Application of arc-flash hazard warning labels to equipment enables compliance with OSHA and NEC requirements. Tri-City Electric Co. can provide hazard mitigation and avoidance designs to reduce exposure to arcing fault hazards.

### Power System Protection

Tri-City Electric Co. can provide engineering services to determine relay and breaker protection settings and control schemes for electromechanical and microprocessor based systems. We can assist with comprehensive protection system documentation and relay system functional test design.

### Industrial SCADA Design

SCADA systems provide system operators and engineers with centralized supervision and control of the power distribution system. SCADA systems can provide a degree of automation for switching operations, load shedding, and cogeneration control. Tri-City Electric Co. can design and install SCADA systems utilizing a variety of control and network protocols.

### Renewable Energy Systems

Renewable energy systems can reduce utility service cost and dependence as well as influence a positive public image. Tri-City Electric Co. can specify, design, and coordinate installation of electric renewable energy technologies.

### Power Quality Solutions

Power quality problems cause nuisance tripping, equipment heating, and inefficient system operation. Tri-City Electric Co. has the expertise to investigate and identify the cause of power quality problems, and to design solutions to return the system to maximum efficiency.

### Power Factor Correction

Power factor correction techniques are essential to improve the efficiency of power delivery, reduce losses, avoid penalties from utilities, and ensure better voltage regulation. A properly sized and installed capacitor bank provides leading reactive power, counteracting the lagging reactive power drawn by inductive loads. Switched banks automatically connect capacitors to optimize correction under varying load conditions.

### Professional Expertise

Tri-City Electric Co. has extensive engineering expertise in all of these areas. Professional Engineer services are also available as required by project scope.



Tri-City Group

### POWER SYSTEM ANALYSIS & DESIGN FROM A NAME YOU CAN TRUST

Tri-City Electric is part of the Tri-City Group family of companies, one of the largest family-owned contractors in the country with a known reputation for quality and success. With the foundation of Tri-City Group, you get the confidence and backing of the Tri-City name, with the specialty and expertise of power system analysis and design.

Find out how you can get **CONFIDENCE DELIVERED®** on your next project.  
Go to [www.tricityelectric.com](http://www.tricityelectric.com)

