

## Distribution Line Design Training

January 31-February 3, 2012  
Bloomington, MN

Power System Engineering, Inc. (PSE) is offering a course on Distribution Line Design for utility staff responsible for designing and constructing distribution overhead line, underground line, and new services. The course has a mix of lectured material, group exercises, and participant discussion that revolves around real life design situations.

### Why attend this course?

- Acquaints new staff or changes in staff responsibilities with distribution line and new service design principles.
- Provides a refresher for staff that is currently responsible for distribution line and new service design.
- Instructed by engineers and technicians who are currently design distribution facilities and are up-to-date on current design technologies and challenges that designers face.
- Comprehensive yet compact program that gives participants enough information to immediately apply at their utility.

### Course topics include:

#### Introduction

- The power industry
- Generation, transmission, and distribution
- The roles of line designers and line stakers

#### Power System Concepts

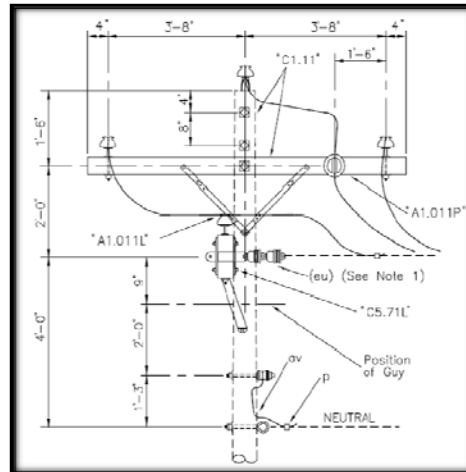
- Voltage and current
- Single and three-phase power
- Demand and energy
- Power factor and load factor
- Coincident and diversity factor

#### Electric Power Components

- Overhead and underground systems
- Major equipment and functions

#### Overhead Design

- Conductor types and characteristics
- Conductor tension selection and sag tables



- Pole types, loading, selection, and setting depths
- Tangent structure configurations, components, loadings, and selection
- Angle structure configurations, components, loading, and selection
- Dead-end structure configurations, components, loading, and selection
- Guying and anchoring selection and configuration
- Equipment loading on structures
- NESC overview for overhead design

#### Underground Design

- Cable types and selection
- Elbows, terminators, splices, junction modules, etc. (200A & 600A)
- Junction modules, switchgear, fusing cabinets, fault interrupters, etc.
- Installation configurations (plow, trench, conduit, duct systems)
- Conduit sizing and pulling tensions
- NESC overview for underground design

#### New Service Design

- Customer service configurations
- Load estimating
- Transformer types, sizing, and configuration
- Secondary conductor sizing and selection

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## Instructors

**Erik S. Sonju, P.E.** is a registered professional engineer with 15 years of experience working as both a system engineer for a Midwest utility and as an engineering consultant to electric utilities throughout the United States. He is the Vice President of Power Delivery Planning and Design for PSE located in Madison, WI. In addition to power delivery planning and analysis, Erik has actively designed or led the design of over 700 miles of transmission and distribution line for a variety of electric utilities. He has also instructed line design courses for electric cooperatives and investor owned utilities throughout the Midwest.

**Scott McLaughlin** is a Utility Consultant with PSE located in Cedar Rapids, IA. He has been designing distribution and transmission lines for over five years for electric utilities throughout the Midwest. Scott has designed, staked, and overseen activities of over 500 miles of distribution line including underground distribution design utilizing up to 750 MCM URD cable. Scott attended power lineman school and has experience in distribution line construction. He has also instructed line design courses for electric cooperatives and investor owned utilities throughout the Midwest.

**Mike Mezera** is a degreed mechanical engineer and Line Design Engineer with PSE. His primary responsibility is transmission line design with projects ranging in voltage from 34.5kV to 115kV. He has also field engineered and staked cooperative distribution lines to RUS specifications. Mike's engineering activities related to the design of electric transmission and distribution lines include: selection of land corridors, layout of structures within corridors, selection and loading analysis of structures, conductor sag and tension analysis, and review of NESC and local standards. Mike has developed and reviewed engineering calculations and design documentation for new and existing utility line projects.

**Steve Hall** is the Distribution Line Design Manager for PSE located in Madison, WI. He has been designing distribution and transmission lines for utilities for over twenty-five years, with the majority of those years as project manager. Steve has experience with obtaining easements, road, rail, and DNR permits, and also with design standards development and implementation. He has been an instructor at line design training programs that have been used by cooperative statewide associations and municipalities. Steve is also experienced with project management and inspection throughout all phases of construction.

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## General Information

**Fee Includes:** Morning and afternoon refreshments, course material, and course binder. The fee does not include hotel, travel, lunch, or other expenses.

**Please bring:** A calculator that has trigonometric functions which will be used during class for example problems and a copy of the most recent National Electrical Safety Code book.

**Location:** This course will be held at the Radisson Hotel located at 1700 East American Blvd. Bloomington, MN. A group rate of \$95 plus tax is available for a standard king room including breakfast. To reserve a room, please call 952-854-8700 and ask for the Power System Engineering room block. Reservations must be made by Friday, January 6, 2012 in order to receive the group rate.

**Course Times:**

Tuesday, January 31 through Thursday, February 2 from 8:00 a.m. to 5:00 p.m.

Friday, February 3 from 8:00 a.m. to 12:00 p.m.

Tuesday through Thursday sessions will have a one hour break for lunch.

**For questions or more information on this course, contact:**

Heather Howard

608-268-3560

howardh@powersystem.org



## **Distribution Line Design Training**

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Bloomington, MN

### **Registration:**

Visit our secure website at [www.powersystem.org](http://www.powersystem.org) to register for this course and to pay by credit card. At the top of the home page on our website, click on news & events then calendar of events. Locate the line design training on the calendar and follow the prompts to register and pay for the course. Alternately, you can complete the form below and mail it along with the course fee to the address listed below.

**Course fee \$1,195.00**

**Register by November 21, 2011 and the course fee is reduced to \$995.00**

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Phone \_\_\_\_\_

Business Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Fax \_\_\_\_\_

Email address \_\_\_\_\_

Number of attendees \_\_\_\_\_ Amount Due \$ \_\_\_\_\_

### **Payment Method:**

Complete this form, include a check made payable to Power System Engineering, Inc. and mail to:

Power System Engineering, Inc.

Attn: Heather Howard

1532 W. Broadway

Madison, WI 53713

Registrant cancellations received after January 13, 2012, will be charged a 25% cancellation fee.