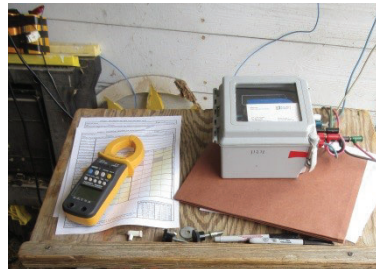


# Introduction to Stray Voltage

September 21, 2021

## Stray Voltage Testing

September 22-23, 2021



**Arlington Ag Research Station  
Public Events Building  
N695 Hopkins Road  
Arlington, WI 53911**

### *Developed by*

University of Wisconsin Biological Systems  
Engineering Department

Public Service Commission of Wisconsin

Wisconsin Department of Agriculture, Trade and  
Consumer Protection

The series of stray voltage investigators' courses has been redesigned to reduce time in the classroom and improve knowledge retention by combining web-based instructional modules with our classroom sessions. You will review basic materials at home before attending the course. When you enroll for a course you will be sent instructions on accessing the web-based instructional material. You will need to successfully complete these instructional modules before attending the classroom session. Each instructional module will have a short quiz to test your knowledge. After the classroom session, you will take a final exam online. An Advanced Level Class will be held November 16-17, 2021 in Madison, Wisconsin.

### **Course Organizers and Instructors:**

**Brian Costello** is a Senior Agricultural Representative for Alliant Energy. As a stray voltage investigator, Brian has conducted more than 500 investigations in his 16 years at Alliant Energy. He has been assisting with the Stray Voltage Investigator Training classes for the past 10 years.

**Robert Fick, PhD, PE**, is Lead Agricultural Engineer at Alliant Energy and adjunct professor of Biological Systems Engineering at the University of Wisconsin. He has helped develop stray voltage rules and protocols for the State of Michigan and has taught stray voltage classes at Michigan State University and the University of Wisconsin for the last 22 years and helped develop the Wisconsin Farm Wiring Classes.

**Michael Haas, PE**, is a Principal Engineer for the Agriculture Services department at We Energies. In the past 14 years, he has had a wide variety of responsibilities ranging from performing numerous stray voltage investigations to working as an expert witness. Presently at We Energies, Michael's duties are focused around providing support, training, and technical assistance for the agriculture representatives.

**Paul Ortmann** is a Senior Electrical Engineer with Idaho Power Company. He has been involved in the investigation of stray voltage for several years, and has taught classes on stray voltage in Wisconsin, Minnesota, and Idaho. Paul has also been involved in the development of stray voltage rules and investigation protocols.

**Douglas J. Reinemann, PhD** is professor of Biological Systems Engineering at the University of Wisconsin-Madison and Associate Dean for Extension and Outreach in the College of Agricultural and Life Sciences at the University of Wisconsin-Madison. He has Extension, research and teaching appointments in the areas of machine milking and rural energy issues. He has conducted research and educational programs on stray voltage since 1990.

## Introduction to Stray Voltage September 21, 2021

The introductory course is for those new to the topic of stray voltage. It is designed to give dairy producers and agricultural professionals a basic understanding of stray voltage sources and solutions and includes a demonstration of simple spot check measurements for stray voltage.

### COURSE TOPICS INCLUDE:

- ◆ Basic Electrical Knowledge
- ◆ Utility and Farm Circuits
- ◆ Review of Animal Research
- ◆ Stray Voltage Rules and Regulations
- ◆ Voltage Spot Checks

### COURSE SCHEDULE:

September 21: 8:00 am - 5:00 pm - Lunch and Dinner included

## Stray Voltage Testing September 22-23, 2021

The testing course is designed to give the professional stray voltage investigator the tools required to collect the data required for a complete stray voltage investigation. Students will gain an understanding of the farm and utility circuits associated with stray voltage and measurement techniques to determine the sources of voltage and current on a farm. This course includes farm visits and a hands-on exercise during which the student will work with an experienced stray voltage investigator and perform all of the standard measurements of a stray voltage investigation.

### COURSE TOPICS INCLUDE:

- ◆ Review of Electrical Calculation Methods
- ◆ Stray Voltage Circuits and Sources
- ◆ Agricultural Electrical Code
- ◆ Customer Relations
- ◆ Stray Voltage Measurement Tools
- ◆ Measurement Techniques and Data Recording
- ◆ Hands-On Stray Voltage Investigation in Small Groups, and Data Quality Analysis

### COURSE SCHEDULE:

September 22: 8:00 am - 5:00 pm - Lunch and Dinner included  
September 23: 8:00 am - 12:00 pm - Box Lunch included

## General Information

### REGISTRATION FEES:

#### Introduction to Stray Voltage \$175

**\$200 if registered after September 6, 2021**

Fee includes registration, materials, breaks, lunch and dinner.

#### Stray Voltage Testing \$350

**\$400 if registered after September 6, 2021**

Fee includes registration, materials, breaks, lunch on Wednesday and Thursday and dinner on Wednesday.

An **Advanced Level Class** will be held

November 16-17, 2021 in Madison, Wisconsin.

**Make checks payable to:** Conference Management-MREC Stray Voltage

**Mail to:** Wisconsin Union, Conference Management,  
800 Langdon Street, Madison, Wisconsin 53706.

**Online:** <https://uwmadison.eventsair.com/sv/reg>

Please advise us at the time of registration if you have a disability and desire special accommodations. Requests will be kept confidential.

**COURSE LOCATION:** Arlington Ag Research Station, Public Events Building, N695 Hopkins Road, Arlington, WI 53911

**LODGING OPTIONS:** Holiday Inn Express,  
7184 Morrisonville Road, DeForest, WI 53532,  
(608) 846-8686

Comfort Inn & Suites, 5025 County Highway V, DeForest, WI 53532, (608) 846-9100

Please make your own hotel reservations by calling the hotel of your choice.

**CANCELLATIONS/REFUNDS:** All cancellations must be made in writing to [conferences@union.wisc.edu](mailto:conferences@union.wisc.edu) by Monday, September 6, 2021 in order to receive a partial refund. A \$75 process and handling fee will be assessed to any cancellation made by the deadline. Cancellations after Monday, September 6, 2021 will not receive a refund. WU Conference Management may require up to 10 business days to process and issue a refund.

## Registration Form

### Introduction to Stray Voltage

September 21, 2021

### Stray Voltage Testing

September 22-23, 2021

**MAIL TO:** Memorial Union Conference Management

800 Langdon Street  
Madison, Wisconsin 53706

**ONLINE:** <https://uwmadison.eventsair.com/sv/reg>

Fill out a **separate** registration form (or copy) for each registrant. *Print clearly or type*

Name \_\_\_\_\_

Company \_\_\_\_\_

Job Title \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Daytime Phone \_\_\_\_\_

Email address to access coursework:

\_\_\_\_\_

Introduction to Stray Voltage \$175  
**\$200 if registered after September 6, 2021**

Stray Voltage Testing \$350  
**\$400 if registered after September 6, 2021**

Enclose fee. Payment must be made at time of registration.

Make checks payable to: Conference Management  
- MREC Stray Voltage

Please charge to the following account:

Visa  MC  AMEX  DISC

Expiration Date \_\_\_\_\_

Credit Card # \_\_\_\_\_

Name on Card \_\_\_\_\_

Signature \_\_\_\_\_