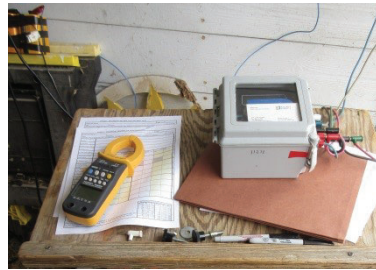


## Introduction to Stray Voltage

May 14, 2019

## Stray Voltage Testing

May 15-16, 2019



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 October 15-16, 2019 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 14 years at Alliant Energy. He has been assisting with the Stray Voltage Investigator Training classes for the past 8 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 20 years and helped develop the Wisconsin Farm Wiring Classes.

**Michael Haas, PE**, is a Lead Engineer in the Power Quality and Distributed Generation Department at Alliant Energy. In the past 12 years, he has had a wide variety of responsibilities ranging from performing numerous stray voltage investigations to working as an expert witness. At Alliant, Michael assists with power quality issues, distributed generation projects, and the Agriculture Compliance team.

**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.

**Tom Seidl, PE**, is a Principle Engineer with We Energies, a Wisconsin utility. In the course of his duties, he has been conducting stray voltage investigation and analysis for over 30 years. He has been involved in stray voltage investigator training for the last 20 years, and participated in the development of the training class for electricians participating in Wisconsin's Farmstead Rewiring Program. He is a Registered Professional Engineer in the State of Wisconsin.

## Introduction to Stray Voltage May 14, 2019

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:

May 14: 8:00 am - 5:00 pm - Lunch and Dinner included

## Stray Voltage Testing May 15-16, 2019

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:

May 15: 8:00 am - 5:00 pm - Lunch and Dinner included

May 16: 8:00 am - 12:00 pm - Box Lunch included

## General Information

### REGISTRATION FEES:

**Introduction to Stray Voltage \$175  
\$200 if registered after May 6, 2019**

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

**Stray Voltage Testing \$350  
\$400 if registered after May 6, 2019**

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

An **Advanced Level Class** will be held  
October 15-16, 2019 in Madison, Wisconsin.

**Make checks payable to:** UW-Madison.  
**Class sizes will be limited to 40 registrants.**

Registration will be filled on a first come/first served basis. Information will be emailed to confirm your registration.

**Mail to:** CALS Conference Services, 640 Babcock Drive, Madison, Wisconsin 53706 or FAX your registration form to (608) 262-5088.

### Online:

**Intro to SV:** <https://uwccs.eventsair.com/isv19/reg>

**SV Testing:** <https://uwccs.eventsair.com/svt19/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:** If you are unable to attend, please notify CALS Conference Services immediately at (608) 263-1672. To receive a full refund, you must contact CALS Conference Services seven days before the course starts. After that date, a \$75 cancellation fee will be charged. If you fail to cancel, no refund will be granted.

## Registration Form

**Introduction to Stray Voltage**  
May 14, 2019

**Stray Voltage Testing**  
May 15-16, 2019

**MAIL/FAX TO:** CALS Conference Services  
640 Babcock Drive  
Madison, Wisconsin 53706  
Fax: (608) 262-5088

### ONLINE:

**Intro to SV:** <https://uwccs.eventsair.com/isv19/reg>

**SV Testing:** <https://uwccs.eventsair.com/svt19/reg>

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

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

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

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

Email address to access coursework:  
\_\_\_\_\_

**Introduction to Stray Voltage \$175  
\$200 if registered after May 6, 2019**

**Stray Voltage Testing \$350  
\$400 if registered after May 6, 2019**

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

Make checks payable to UW-Madison.

Please charge to the following account:

Visa  MC  AMEX  DISC

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

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

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

Signature \_\_\_\_\_