



History

What is the MREC?

What does the MREC do?

**What resources does
MREC provide?**

Wisconsin Rural Electric Council

- Incorporated 1954
- 5 investor owned, 29 rural cooperatives & University of Wisconsin-Ag. Engineering
- Research, demonstration & education on electrical technologies and conservation
- 1990's focused much attention on stray voltage and began meeting with MN energy providers

Who is the MREC?

Incorporated as MREC when MN energy providers joined

The MREC's members are a diverse group of individuals and organizations involved in

- Energy distribution
- Energy efficiency
- Energy generation
 - (large and small scale)
- Energy education
- And other energy issues of interest to rural energy suppliers and consumers.

Investor-Owned Utilities

- Alliant Energy
- Madison Gas and Electric
- Minnesota Power
- Ottertail Power
- We Energies
- Wisconsin Public Service Corp.
- Xcell Energy

• Rural Electric Coop Associations

- Wisconsin
- Minnesota
- South Dakota

• Land Grant Universities

- University of Wisconsin
- University of Minnesota
- South Dakota State
- Iowa State

• Affiliates

- Energy Service Organizations
- Trade Affiliates
- Individuals

Mission of MREC?

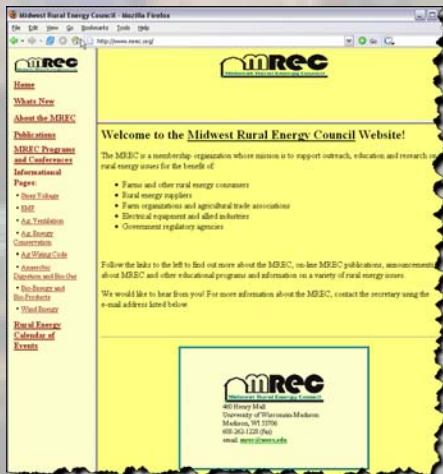
Partnership between Rural Electric Power Suppliers and Land Grant Universities in the upper Midwest. It's mission is to support outreach, education and research on rural energy issues for the benefit of:

- Farms and other rural energy consumers
- Rural energy suppliers
- Farm organizations and agricultural trade associations
- Electrical equipment and allied industries
- Government agencies



How the MREC Communicates

The MREC's primary function is to share best known practices between industry, academia, government, utilities and individuals. To aid in this goal, the MREC uses three primary means to share information and communicate with its members:

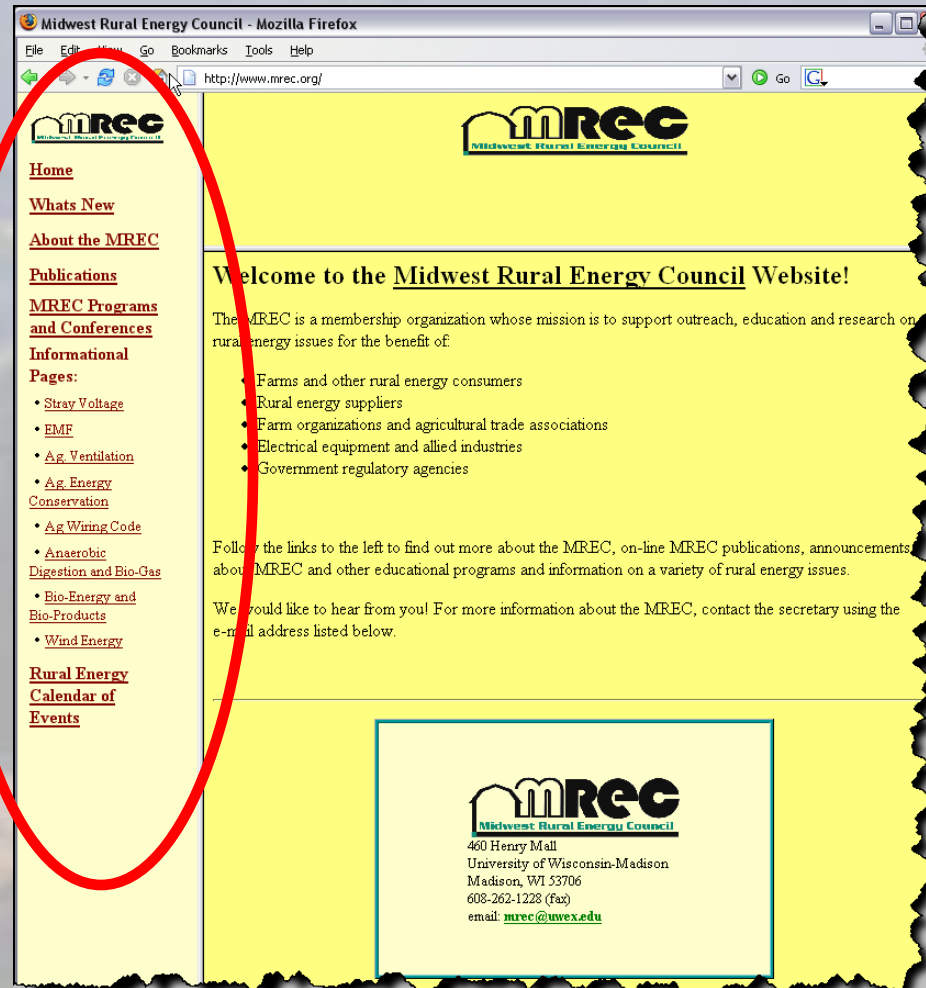


- MREC Website
- Publications
- Annual Conference

What's on Our Website

We have designed our web site to be '3 clicks' away from the information you need on rural energy issues. Our Navigation bar has links to these topics:

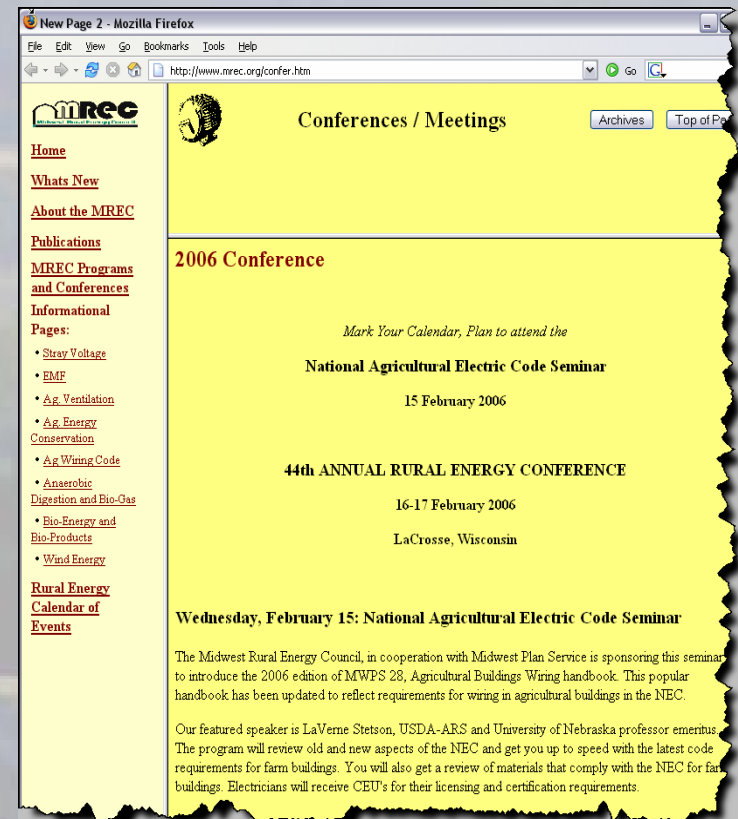
- About the MREC
- Important Upcoming Dates and Conferences
- Publications
- Topical Information Pages



44th Annual MREC Rural Energy Conference

The next annual conference will be held in LaCrosse, Wisconsin on the 16th and 17th of February 2006. The Key Topics for this year include:

- Transmission and Distribution technology
- Stray Voltage testing
- Energy Efficiency on farms and food plants



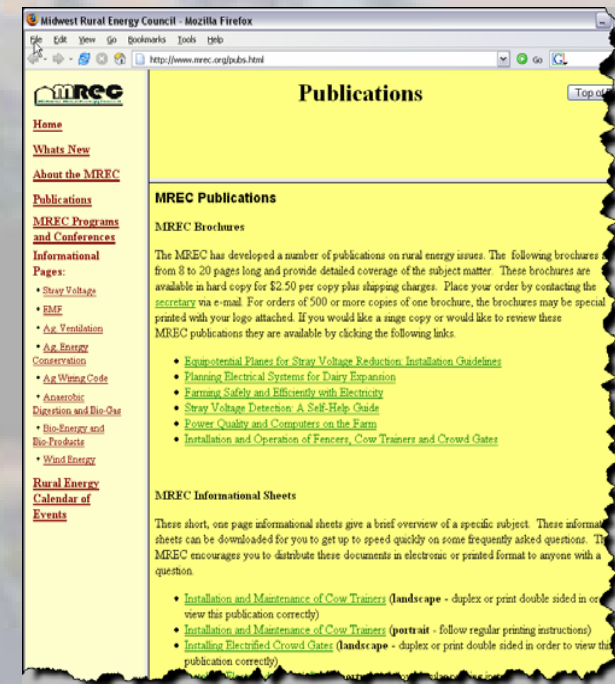
The screenshot shows a web browser window displaying the MREC website. The page is titled "Conferences / Meetings" and features a navigation menu on the left with links for Home, Whats New, About the MREC, Publications, MREC Programs and Conferences, Informational Pages, Rural Energy Calendar of Events, and a list of topics including Stray Voltage, EMF, Ag. Ventilation, Ag. Energy Conservation, Ag. Wiring Code, Anaerobic Digestion and Bio-Gas, Bio-Energy and Bio-Products, and Wind Energy. The main content area highlights the "2006 Conference" with the text: "Mark Your Calendar, Plan to attend the National Agricultural Electric Code Seminar 15 February 2006" and "44th ANNUAL RURAL ENERGY CONFERENCE 16-17 February 2006 LaCrosse, Wisconsin". Below this, it details the "Wednesday, February 15: National Agricultural Electric Code Seminar" and mentions that the Midwest Rural Energy Council is sponsoring this seminar to introduce the 2006 edition of MWPS 28, Agricultural Buildings Wiring handbook. The featured speaker is LaVerne Stetson, USDA-ARS and University of Nebraska professor emeritus.

Be sure to sign up for a reminder on the website!

Website Area: *Publications*

This section houses the many publications released by the MREC. The articles and information sheets are available for download directly from the site but are available in paper form for a small fee. Some of the most recent article topics cover:

- Equipotential Planes for Stray Voltage Reduction: Installation Guidelines
- Planning Electrical Systems for Dairy Expansion
- Farming Safely and Efficiently with Electricity
- Stray Voltage Detection: A Self-Help Guide
- Power Quality and Computers on the Farm
- Installation and Operation of Fencers, Cow Trainers and Crowd Gates



Website Area: *Information Pages*

Stray Voltage Information Resources

The term **stray voltage** has been used for the past 40 years to describe a special case of voltage developed on the grounded neutral system of a farm. If this voltage reaches sufficient levels, animals into contact with grounded devices may receive a mild electrical shock that can cause a behavioral response. At voltage levels that are just perceptible to the animal, behaviors indicative of perceptible pinches may result with little change in normal routines. At higher levels avoidance behaviors may occur.

The term stray voltage is often applied incorrectly to other electrical phenomena such as electric field, magnetic fields and most recently electric current flowing in the earth. These phenomena are generally referred to as **EMF or Electric and Magnetic Fields**. The physiological interactions with these phenomena are different than the mild shock associated with stray voltage. For more information on EMF and other electrical exposures, go to the [EMF Page](#).

The following is a broad range of information resources intended to increase your understanding of stray voltage. Should you have information to contribute to this Web page, please contact the MREC at mrec@uwex.edu.

Calendar of Events: conferences, seminars and workshops on the topic of stray voltage

Electric Utility Service Territories

Illinois -- select "Maps" from the menu		
Iowa -- none available (6/2003)		
Michigan		
Minnesota	Investor-owned	Cooperatives
South Dakota	all utilities	Rural Electric Association
Wisconsin	Investor-owned	Cooperatives

Electrical Power Rates (\$/kWh) in the US: based on state average residential rate

[Michigan Agricultural Electric Council](#)

[Minnesota Public Utility Commission](#)

In addition to published articles, the MREC also produces short information sheets which give a brief overview of a specific subject. Some of the topics include:

- Stray Voltage
- EMF
- Agricultural Ventilation
- Agricultural Energy Conservation
- Agricultural Wiring Code
- Anaerobic Digestion and Bio-Gas
- Bio-Energy and Bio-Products
- Wind Energy

Informational Page: Stray Voltage

- The term ***stray voltage*** has been used for the past 40 years to describe a special case of voltage developed on the grounded neutral system of a farm.
- This page provides a collection of information from credible sources on
 - What stray voltage is
 - How to conduct a stray voltage investigation
 - How stray voltage affects animals
 - How to reduce voltage levels
- MREC publications are available for download
 - from basic consumer oriented
 - too advanced engineering level

To help you provide professional information to your clientele

Informational Page: EMF

- This MREC page will keep you up-to-date on issues relating to EMF
 - Current issues
 - Research
 - Regulation and policy
- By providing you with
 - Publications and
 - An organized collection of links to other organizations

Informational Page: Ventilation

- Ventilation of livestock facilities is critical to the performance and health of farm animals.
- Ventilation is also one of the major uses of electrical energy on dairy, swine and poultry farms.
- The MREC presents this page in cooperation with University Extension and Research faculty to bring you the latest information on
 - Ventilation system design
 - Energy efficiency
 - New ventilation technology

Informational Page:

Ag Energy Conservation

- Electrical energy consumption in agriculture has grown steadily due to increased mechanization, use of confinement housing and expanding farm size.
- There are many new technologies available that can make your farm more energy efficient.
- Upgrading older equipment or purchasing high efficiency equipment to reduce energy consumption can improve monitoring and control functions resulting in a better process outcomes.
- A collection of Information on energy efficiency in agriculture can be found on this page.

Informational Page: Ag Wiring Code

- The MREC provides you with the latest information on
 - NEC code requirements for agricultural buildings.
 - Equipment that complies with NEC code for ag buildings
 - Requirements for interconnect between electrical distribution systems and distributed generation
 - **Standby generators**
 - **Wind power**
 - **Anaerobic Digester / Generators**

Informational Page: Anaerobic Digestion and Bio-Gas

- News and resources on
 - Anaerobic Digester Basics
 - Financial Assistance & Economics
 - Organizations that Support Anaerobic Digestion Endeavors

Wisconsin Biogas Development Group

- Farmers' Digester Experience
- Anaerobic Digester Research
- Uses for Biogas other than Electricity Production

Informational Page: Bio-Energy and Bio-Products

- Materials such as wood, corn, and animal waste can be burned directly, or made into fuels or other value added products.
 - The same corn crop can be made into ethanol and also yield distiller's grain for animal feed and a bio-based plastic container
- The general term for using biomass materials as the feedstock for fuels, chemicals, or other valuable bio-products is bio-refining.
- This page will help you keep up with the bio-refining revolution with information on
 - Bio-power Sources & Technology
 - Corn Ethanol
 - BioDiesel
 - Bio-Electric Generation
 - Biochemical Sources & Technology
 - Links to Organizations that Support Bio-Refining Initiatives

Informational Page: Wind Energy

- Wind energy is the fastest growing renewable energy source in the world
- Many states will be relying on developing their wind resource to meet renewable energy portfolio standards.
- This page will provide you with information on wind power applications and issues in the upper Midwest.

How You Can Learn More

1. Visit the Website

<http://www.mrec.org>

2. Get on the MREC Mailing List

Send an email to: mrec@uwex.edu

3. Become an MREC Member

For Details: <http://www.mrec.org/about.html>

4. Attend the 44th Annual MREC Conference

February 16-17, 2006 in LaCrosse Wisconsin

