

CIRCUITS

NEWS FOR DAKOTA ELECTRIC MEMBERS



"You don't have the smell; you don't have the noise. It handles so well and is such a smooth ride. It's hard going back to the old diesels after driving this bus."

- Terri Johnson, Schmitt & Sons

Electric school bus driver loves her new smooth, quiet ride!

Terri Johnson's face lights up when she talks about the electric school bus. "I love it," she said. "I absolutely love driving that bus!"

Johnson has been driving for Schmitt & Sons Bus Company for 26 years. Last summer she was given the choice of driving a new diesel engine school bus or driving the company's new all-electric school bus, and she chose the latter.

"I was due for a new bus anyway, so when they offered me the opportunity to drive the electric bus, I took it," Johnson said. "I wanted to try something new. In

my 26 years of driving bus, I've gone from driving a propane bus when I first started, to diesel and now to electric."

The electric school bus is part of a first-of-its-kind program in Minnesota. The opportunity was made possible through a collaboration between Schmitt & Sons, Dakota Electric Association® and Great River Energy. The three companies are using this program to demonstrate the technology of a battery electric school bus in a cold-weather climate, as well as on longer suburban and rural routes.

So how has the bus operated so far this

winter? We visited Johnson after her morning route on a 5-degree February day, and she had no complaints.

"The bus handles great," she said. "It is such a smooth and quiet ride. The interior warms up fast, I haven't gotten stuck in any of the snow. I can feel the extra weight from the batteries, which helps."

The 71-passenger bus contains up to five batteries, giving it a range of 100 miles per charge, which fits well within Johnson's 80-mile daily route for the Lakeville school district.

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Upcoming events

| | |
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| TC Auto Show/Electric Room | March 10 |
| Lakeville Landscape/Home Expo | March 11 |
| Dakota County Crops Day | March 14 |
| Board Meeting | March 22, 8:30 a.m. |

Dakota Electric Association® is a registered service mark of the cooperative.

March 2018





Electric bus (cont.)

The cold weather does affect the battery range, however. Johnson has noticed a slight difference in percentage range when it's really cold.

"When it's warmer out, I can come back with about 63 percent battery power," Johnson said, "whereas on a really cold day, I may come back with 48-50 percent battery power."

Regenerative braking

One of the features on the electric bus that helps counteract range loss is regenerative braking. Every time Johnson steps on the brake or takes her foot off the accelerator, the bus slows and energy is transferred to the battery, effectively extending the vehicle's range between charges. She could be coasting down a hill, but she's also adding power to the battery.

Johnson said she has enjoyed figuring out how to get the most out of the regenerative braking system. "I compete with myself," she says with a laugh. "It becomes a game I play with myself every day to do better."

What do the kids think?

According to Johnson, the kids love the electric bus. It is built slightly wider and taller than

a traditional school bus, so the center aisle is wider, there is more leg room, and she says the kids really appreciate the extra space.

They also appreciate the smooth ride. "One of the first things my kids commented on was how smooth the bus is," she said. "There is no jerking when I'm shifting like there is on a traditional bus. It just glides."

The bus is also quiet with no noise from the diesel engine. Johnson says the kids have adjusted their bus behavior and the overall noise level has gone down as a result. "They aren't trying to talk over the noise of the bus, and they really like that," she said.

Because there is no noisy engine, the bus chimes once it reaches 15 mph or below. This is a safety feature to alert those around that the bus is approaching or slowing down.

Despite being nervous the first day, Johnson says she feels more and more comfortable with the bus every day.

"Even in the cold weather when you lose a little battery capacity, you learn how to compensate for that. That's what I like — learning about the bus and what its capabilities are. The more I drive it, the more I learn. It's a fun bus to drive!"

"I love how driver-friendly the bus is. Unlike the diesel engine buses that take a little bit to get going, the electric bus starts right up. Also, the location of all the buttons, switches and gauges are close by and easily accessible."



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ENERGY WISE  MN

How much does it cost?

Last month we looked at how much it costs to operate lighting and heating equipment. This month, we show you how much it costs to operate common kitchen and laundry appliances.

| REFRIGERATORS | TYPICAL ENERGY USE | AVG. MONTHLY COST AT 12.5¢/kWh |
|--|--------------------|--------------------------------|
| Top Freezer — Purchased 1993-2000 | 71 kWh/mo | \$8.88 |
| Top Freezer — Purchased 2001-2008 | 43 kWh/mo | \$5.38 |
| Top Freezer — ENERGY STAR® Qualified | 34 kWh/mo | \$4.25 |
| Side-by-Side — Purchased 1993-2000 | 91 kWh/mo | \$11.38 |
| Side-by-Side — Purchased 2000-2008 | 58 kWh/mo | \$7.25 |
| Side-by-Side — ENERGY STAR Qualified | 44 kWh/mo | \$5.50 |
| Bottom Freezer — Purchased 1993-2000 | 73 kWh/mo | \$9.13 |
| Bottom Freezer — Purchased 2001-2008 | 50 kWh/mo | \$6.25 |
| Bottom Freezer — ENERGY STAR qualified | 38 kWh/mo | \$4.75 |

| FREEZERS | TYPICAL ENERGY USE | AVG. MONTHLY COST AT 12.5¢/kWh |
|---|--------------------|--------------------------------|
| Upright Freezer <16.5 cubic ft. | 56 kWh/mo | \$7.00 |
| ENERGY STAR Upright Freezer <16.5 cubic ft. | 47 kWh/mo | \$5.88 |
| Chest Freezer <16.5 cubic ft. | 34 kWh/mo | \$4.25 |
| ENERGY STAR Chest Freezer <16.5 cubic ft. | 29 kWh/mo | \$3.63 |

| KITCHEN APPLIANCE | TYPICAL ENERGY USE | AVG. MONTHLY COST AT 12.5¢/kWh |
|------------------------|--------------------|--------------------------------|
| Dishwasher | 30 kWh/mo | \$3.75 |
| ENERGY STAR Dishwasher | 26 kWh/mo | \$3.25 |
| Oven | 45 kWh/mo | \$5.63 |
| Range Top | 37 kWh/mo | \$4.63 |
| Microwave Oven | 17 kWh/mo | \$2.13 |
| Toaster Oven | 4 kWh/mo | \$0.50 |
| Coffeemaker | 10 kWh/mo | \$1.25 |

| LAUNDRY | TYPICAL ENERGY USE | AVG. MONTHLY COST AT 12.5¢/kWh |
|----------------|--------------------|--------------------------------|
| Clothes Washer | 8 kWh/mo | \$1.00 |
| Clothes Dryer | 83 kWh/mo | \$10.38 |

These figures are based on the average use of an appliance in good working condition and are based on national averages and independent research. Actual use will vary based on the number of hours used, and the age and condition of equipment.



ENERGY WISE  MN

If you are looking to upgrade to a more energy-efficient kitchen/laundry appliance, Dakota Electric offers rebates on refrigerators, freezers and electric clothes dryers.

Visit dakotaelectric.com/programs-rebates for more information.

VISIT US AT THE UPCOMING HOME AND GARDEN SHOWS!

Dakota Electric representatives will be available to answer questions about energy efficiency, rebates, programs and more.

Lakeville Landscape & Home Expo
Saturday, March 10 | 9 a.m. - 3 p.m.
Lakeville North High School
19600 Ipava Ave.

Apple Valley Home & Garden Show
Saturday, April 21 | 9 a.m. - 3 p.m.
Eastview High School
6200 140th St. W



IMPORTANT NOTICE

Dakota Electric Association is implementing a new member information system to serve you better. When calling, please be aware that wait times may be longer than normal. We appreciate your patience. Thank you!

Is solar right for me?

Questions to consider before installing solar on your home

A portion of the electricity Dakota Electric members receive comes from renewable energy resources such as wind, solar, hydro and refuse derived fuel. Great River Energy, Dakota Electric's wholesale power supplier, currently has 17 percent renewable energy in their generation portfolio. In addition, Dakota Electric has two solar arrays that produce approximately 1 megawatt (MW) of renewable energy that is distributed solely to Dakota Electric members.

However, if you are interested in adding solar to your home, here are some questions you may want to consider before installation.

Do you own your own home?

Homeowners are better candidates for solar energy than renters. While it can be a good investment for the landlord, a renter is unlikely to invest in property they don't own.

Have you already made your home more energy efficient?

A homeowner should consider an energy-efficiency tuneup first. Making a home more energy efficient is less expensive and has a greater return on investment than most solar systems. By reducing the amount of energy used, members might be able to install a smaller, less expensive photovoltaic (PV) system to meet their needs.

Is your electric bill greater than \$100/month?

Even though a PV system can generate a significant portion

of the energy you use, members with relatively low energy bills might not save enough money each month to pay for the investment in solar.

How much sun shines on your roof?

Homes situated with full sun provide optimal opportunities for generating power. While solar PV can generate some electricity on cloudy days or with some shade, the output is much lower than full sun and may not provide enough energy. Perhaps participating in Dakota Electric's Wellspring Renewable Energy® program would be a better option.

Is your roof less than five years old?

A new roof, or at least one less than five years old, is a good starting point for solar because the array typically lasts 20 years or more. It wouldn't be wise to install it on an older roof and later have to remove the solar system to repair or replace the roof.

Does your roof face the south, southeast, or southwest?

Southern orientations are the most effective at producing energy, while east-facing, west-facing and north-facing orientations aren't nearly as effective.

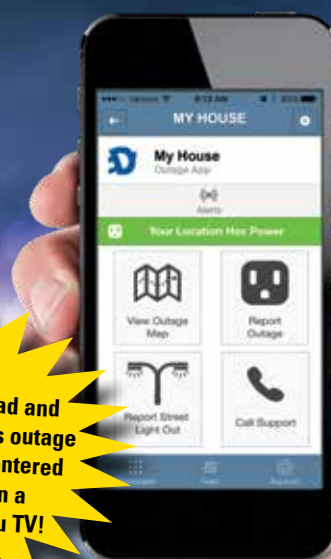
Is your home free from neighborhood association restrictions that would affect system design and installation?

Depending on association limitations or rules, non-standard

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Once you have installed the app, you must request a code by visiting dakotaelectric.com and clicking on Power Outages > Outage App. The code is specific to your account and is required to personalize the app to your residence.



installation could compromise the design and performance of the system. Some homeowners' associations restrict the installation of PV modules on rooftops, especially if they're visible from the street.

Are you planning to live in your home at least five years?

Given the initial cost of PV systems, the return on investment could be long, even 10 years or more. If you plan to move, you won't enjoy the benefits of that investment. And, because rooftop solar is still relatively new, it's difficult to say whether it will increase the home's value when it's time to sell.

How do you plan to pay for the system?

Paying cash is the simplest, least expensive option. While alternative funding options are available, they should be researched carefully, and total costs should be considered.

Do you have a simple, basic roof or does it have lots of levels, dormers or other unique aspects?

Roof construction can have an impact on cost and ease of installation as well as the performance of a system. An experienced solar contractor will consider things like the slope, shape and material of your roof before installing a solar system.

Have you looked into state and local incentives?

Before proceeding, you should investigate federal, state and local incentives that could reduce the system's net cost and improve the overall bottom line. All members should consider getting professional tax and financial advice before making a decision. Contact Dakota Electric at 651-463-6180 for specifics on interconnection requirements as well as any other assistance that may be available.

Source: Touchstone Energy

SOLAR Installation Rebate

To assist members in recovering the costs associated with installing a solar system, Dakota Electric offers a performance-based solar rebate program.

1. Receive \$0.50 per watt for installed capacity, not to exceed \$4,000.
2. Payment of the rebate is based on the kilowatt-hour (kWh) production from your photovoltaic (PV) system, as recorded by Dakota Electric's production meter.
3. The rebate is credited on your bill monthly at \$0.08 per kWh produced up to the rebate amount or 10 years, whichever occurs first.



Twin Cities Auto Show March 10-18 | Mpls Convention Center

Are you interested in an electric vehicle (EV)? Be sure to check out the Electric Room at the Twin Cities Auto Show.

- Several electric and hybrid vehicles on display.
- Speak with EV owners and experts to learn about the incredible efficiency and instant torque generation of electric vehicles.
- Public charging, workplace charging and in-home charging station information will be available.

2018 LIGNITE EDUCATION SEMINAR



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JUNE 11-14

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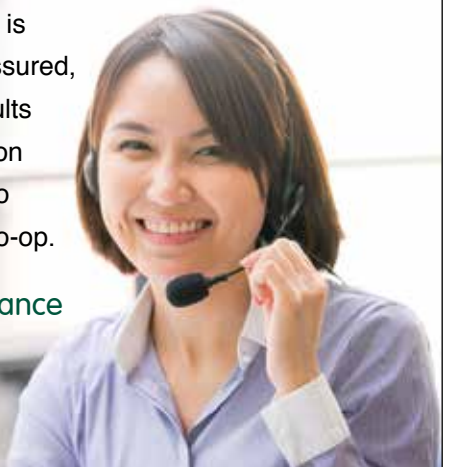
*In-Home Estimate Needed, Offer Expires March 31, 2018

We appreciate your feedback!

Dakota Electric has hired NRECA Market Research Services to conduct a residential member satisfaction survey on our behalf. Should you receive a call asking for your opinions about Dakota Electric's service, we would sincerely appreciate your feedback. Calling is scheduled to begin March 5.

We know your time is valuable, so rest assured, we will use the results to make decisions on matters important to the future of your co-op.

Thank you in advance for your time!





Circuits Quick Clips

Dakota County Crops Day at Dakota Electric

Wednesday, March 14 | 9 a.m. to 2 p.m.
4300 220th St. W., Farmington, MN 55024

For the twelfth year, Crops Day will bring specialists to Dakota County to share local research results and crop management strategies with producers and other agricultural professionals.

| | |
|--|---|
| Variable Rate Nitrogen: Based On What? | Brad Carlson , regional crops educator, University of Minnesota Extension |
| Update on the Minnesota Nitrogen Management Plan in Dakota County | Eric Nooker , soil scientist, Minnesota Department of Agriculture |
| Corn and Soybean Disease Update for 2018 | Dean Malvick , state extension specialist, plant pathology, U of M Extension |
| Alfalfa Management for 2018 | James Eckberg , Department of Agronomy, University of Minnesota |
| Cover Crop Options in Dakota County | Ashley Gallagher , resource conservationist, Dakota County Soil & Water Conservation District |
| Weed Management Update for Corn & Soybeans | David Nicolai , regional crops educator, University of Minnesota Extension |
| NRCS & FSA updates | Michelle Wohlers , USDA Natural Resources Conservation Service; Dianne Holtman , USDA Farm Service Agency |
| Energy conservation programs | Mike Plutowski , Dakota Electric Assoc. |
| Lunch with the experts and trade show | |

This event is free and open to the public, but pre-registration is requested. Please RSVP to Jackie at 651-463-6319 or jbauer@dakotaelectric.com.

For program information or questions, contact David Nicolai, regional extension crops educator, at 651-490-7700 or nico0071@umn.edu.

The Southeast Irrigators Association Annual Meeting will be held in the same space immediately after the Crops Day meeting.

Nominating committee selects 2018 director candidates

In accordance with Section 3, Article III, of the Bylaws of this Association, we the undersigned Nominating Committee, in a meeting assembled on February 15, 2018, in the office of Dakota Electric Association, have selected the following nominees for directorship of said Association to be on the ballot for the annual meeting to be held on April 26, 2018.

The 2018 Nominating Committee is made up of the following people: Bruce Adams, Jerry Brown, Tim Burke, Bill Craigie, Robert Erickson, Nathaniel Reitz, Maureen Schriener, and Ray Yarwood.

Watch for more information about the 2018 annual meeting and director election in the April issue of *Circuits*.

District 1

Jerry Pittman (incumbent)
Curt DeCoux

District 2

Clay Van De Bogart (incumbent)

District 3

Ken Danner (incumbent)
Douglas Bonar
Jordan Schuetzle

District 4

Judy Kimmes (incumbent)

Board of Directors

District 1

John (Jack) DeYoe
David Jones, Treasurer
Gerald F. Pittman, Vice Chair

District 2

Janet L. Lekson, MREA Director
Jim Sheldon, Chair
Clay Van De Bogart, Great River
Energy Director

District 3

Kenneth H. Danner
William F. Holton
Margaret D. Schreiner, Great River
Energy Director

District 4

Paul Bakken
Judy H. Kimmes
Paul A. Trapp, Secretary



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Greg Miller, President & CEO
Tanya Wolfs, Editor



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SAVE THE DATE! Energy Trends Expo

Thursday, May 10 | 6-8 p.m. | Eagan Community Center

1501 Central Parkway, Eagan, MN 55121

This free event will feature:

- Vendor tradeshow
- Electric vehicle car show
- Breakout session: 6:45 p.m.
- Rides on Minnesota's first electric school bus*

Watch for more details in next month's *Circuits*!



*Read more about the electric school bus on the cover.

Contact Us

Member service & drive-up window
7 a.m. – 7 p.m. Monday - Friday
651-463-6212 or 1-800-874-3409
Minnesota Relay Service 711

Lobby 7 a.m. – 4:30 p.m., Monday - Friday
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Program information and offers in this newsletter
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