

A horizontal collage of various images related to energy and agriculture. From left to right, it includes: a white water filter, solar panels, a modern house at night, industrial machinery, a hand holding a green 'Solution' button with a lightbulb icon, a factory, wind turbines, a laptop, a compact fluorescent lightbulb, a hand holding a pen over a green bar chart, a water splash, a hand holding a pen over a blue bar chart, a compact fluorescent lightbulb, a farm with silos, and a sign that says 'OVERSEER HELP MANAGEMENT'.

AGRICULTURAL ENERGY MANAGEMENT PROGRAM

Dena Weihert, CEA
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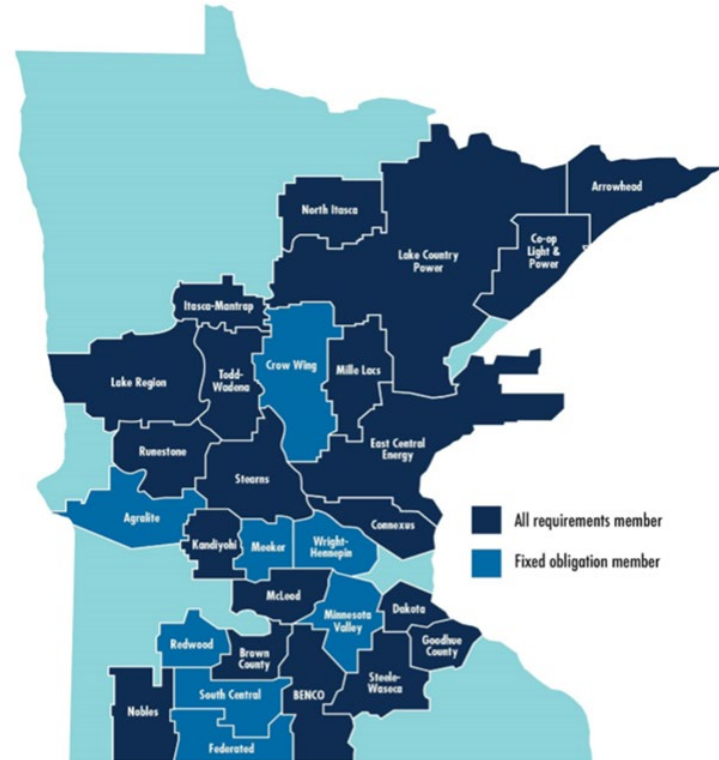
AGENDA

- ❑ Who is Great River Energy (GRE)
- ❑ Agricultural energy management program overview
- ❑ How the program works
- ❑ Benefits of program
- ❑ Questions



WHO IS GREAT RIVER ENERGY?

- ❑ Minnesota's largest G&T cooperative electric utility
- ❑ 2,800 MW generation assets
- ❑ 4,770 miles of transmission lines
- ❑ 910 employees
- ❑ 28 member-owner cooperatives
- ❑ 665,000 services (about 1.7 million people served)



COOPERATIVES – 28 MEMBERS

Agralite Electric Cooperative

320 East Highway 12 | P.O. Box 228
Benson, MN 56215
320-843-4150 | agralite.coop

Arrowhead Electric Cooperative

5401 West Highway 61 | P.O. Box 39
Lutsen, MN 55612
218-663-7239 | aocimn.com

BENCO Electric Cooperative

20946 59th Avenue | P.O. Box 8
Mankato, MN 56002
507-387-7963 | benco.org

Brown County Rural Electric Association

24386 State Highway 4 | P.O. Box 529
Sleepy Eye, MN 56085
1-800-658-2368 | browncountyrea.coop

Connexus Energy

14601 Ramsey Blvd. NW
Ramsey, MN 55303
763-323-2600 | connexusenergy.com

Cooperative Light & Power

1554 Highway 2 | P.O. Box 69
Two Harbors, MN 55616
1-800-580-5881 | clpower.com

Crow Wing Power

17330 Highway 371 North | P.O. Box 507
Brainerd, MN 56401
1-800-648-9401 | cwpower.com

Dakota Electric Association

4300 220th St. West
Farmington, MN 56024
1-800-874-3409 | dakotaelectric.com

East Central Energy

412 Main Ave. North | P.O. Box 39
Braham, MN 55006
1-800-254-7944 | eastcentralenergy.com

Federated Rural Electric Association

77100 U.S. Highway 71 | P.O. Box 69
Jackson, MN 56143
1-800-321-3520 | federatedrea.coop

Goodhue County Cooperative Electric Association

1410 Northstar Drive | P.O. Box 99
Zumbrota, MN 55992
1-800-927-6864 | gceca.com

Itasca-Mantrap Cooperative Electrical Association

16930 County Road 6 | P.O. Box 192
Park Rapids, MN 56470
1-888-713-3377 | itasca-mantrap.com

Kandiyo Power Cooperative

8605 47th St. NE
Spicer, MN 56288
320-796-1155 | kpcoop.com

Lake Country Power

2810 Elida Drive
Grand Rapids, MN 55744
1-800-421-9959 | lakecountypower.coop

Lake Region Electric Cooperative

1401 South Broadway | P.O. Box 643
Pelican Rapids, MN 56572
1-800-552-7658 | lrec.coop

McLeod Cooperative Power Association

1231 Ford Ave. | P.O. Box 70
Glencoe, MN 55336
1-800-494-6272 | mcleodcoop.com

Meeker Cooperative

1725 U.S. Highway 12 East | Suite 100
Litchfield, MN 55355
1-800-232-6257 | meeker.coop

Mille Lacs Energy Cooperative

36559 U.S. Highway 169 | P.O. Box 230
Aitkin, MN 56431
1-800-450-2191 | mlcemn.net

Minnesota Valley Electric Cooperative

125 Minnesota Valley Electric Drive
Jordan, MN 55352
1-800-282-6832 | mvcc.net

Nobles Cooperative Electric

22636 US Highway 59 | P.O. Box 788
Worthington, MN 56187
507-372-7331 | noblesce.coop

North Itasca Electric Cooperative

301 S. Main Avenue | P.O. Box 227
Bigfork, MN 56628
218-743-3131 | northitascaelectric.com

Redwood Electric Cooperative

60 Pine Street | P.O. Box 15
Clements, MN 56224
507-692-2214 | redwoodelectric.com

Runestone Electric Association

6875 County Road 28 SW
Alexandria, MN 56308
1-800-473-1722 | runestoneelectric.com

South Central Electric Association

71176 Tiell Drive | P.O. Box 150
St. James, MN 56081
507-375-3164 | southcentralelectric.com

Stearns Electric Association

900 Kraft Drive SE | P.O. Box 40
Melrose, MN 56352
1-800-962-0655 | stearnselectric.org

Steele-Waseca Cooperative Electric

2411 W. Bridge Street | P.O. Box 485
Owatonna, MN 56060
1-800-526-3514 | swce@swce.coop

Todd-Wadena Electric Cooperative

550 Ash Ave. NE | P.O. Box 431
Wadena, MN 56482
1-800-321-8932 | toddwadena.coop

Wright-Hennepin Cooperative Electric Association

6800 Electric Drive | P.O. Box 330
Rockford, MN 55373
1-800-943-2667 | whe.org



AG ENERGY MANAGEMENT PROGRAM

- ❑ Available to all GRE Coop members
- ❑ 75% audit cost paid by GRE
 - GDS partnership – must use GDS to be eligible for program funding
- ❑ 25% audit cost paid by participant*
- ❑ Installation of recommendations not required, but is encouraged

No savings if no implementation



AG ENERGY MANAGEMENT PROGRAM

- ❑ All farm types eligible
 - Dairy, grain, swine, poultry, greenhouse, orchards, horse, maple syrup, etc.
- ❑ Green builds do not qualify, must be existing operation
- ❑ Program may be expanded to rural businesses in the future



HOW DOES THE PROGRAM WORK?

- ❑ Producer calls 800-441-8525 for quote
- ❑ Producer pays 25% cost share
- ❑ Historical energy use gathered
- ❑ Site visit completed
- ❑ Report completed within 45 days



WHEN DO ENERGY AUDITS MAKE SENSE?

- ❑ Anytime
 - At the right cost
- ❑ Larger than hobby farm
- ❑ Concern about high utility bills
- ❑ Farm looking to upgrade equipment
- ❑ Production increased over time, but facilities haven't changed



BENEFITS OF ENERGY MANAGEMENT PLAN

- ❑ Identify and prioritize energy improvements
- ❑ Conserve energy, reduce costs, improve bottom line
- ❑ Understand how much energy is used by various equipment
- ❑ Take advantage of financial assistance programs



BENEFITS OF PROGRAM

- ❑ Completed audit can be used to apply for funding through
 - Federal programs
 - USDA-REAP
 - NRCS-EQIP
 - Utility rebates
 - State programs



NEXT STEPS

□ Easy as 1-2-3

Step 1

Call 800-441-8525 to verify eligibility and cost.

Step 2

Experts conduct a site visit and complete an energy audit that includes an in-depth analysis and recommendations via a comprehensive written, energy management plan.

Step 3

If you choose to implement energy efficiency upgrades as a result of the audit, contact your cooperative, as rebates may be available.



SITE ASSESSMENT & AUDIT REPORT

The written energy management plan (audit report) makes a site-specific assessment of the current uses of energy.

The goal is to provide energy usage information, plus energy saving or production improvement opportunities for the farm's consideration and implementation.

The audit report is written to meet ASABE S612 standards and NRCS CAP 128 requirements.



EXAMPLE ENERGY SAVINGS - DAIRY

Recommended Measure	Estimated Reduction in Energy Use				Estimated Costs, Savings, Payback, and Prioritization for Implementation			
	Electric Savings (kWh)	Demand Savings (kW)	Propane Savings (gal)	Energy Savings (MMBtu)	Install Cost	Annual Cost Savings	Payback (years)	Est. Life (years)
Water Heater	-29,266	-4.5	1,412.7	29.6	\$2,500	\$296	8.4	15-20 years
Lighting	16,552	4.5	-	56.5	\$9,307	\$1,159	8	50,000 – 100,000 hours
Fans	1,832	0.2	-	6.3	\$1,200	\$128	9.4	15-20 years
Total	-10,882	0.2	1,412.7	92.3	\$13,007	\$1,583	8.2	



EXAMPLE ENERGY SAVINGS - DAIRY

Recommended Measure	Estimated Reduction in Energy Use					Estimated Costs, Savings, Payback, and Prioritization for Implementation			
	Electric Savings (kWh)	Demand Savings (kW)	Propane Savings (gallons)	Diesel Savings (gallons)	Energy Savings (MMBtu)	Install Cost	Annual Cost Savings	Payback (years)	Est. Life (years)
Engine Block Heaters	5,346	-	-	-	18.3	\$210	\$401	0.5	5-10 years
Automated Controls	18,043	-	-	-	61.6	\$1,400	\$1,353	1	10+ years
Lighting	121,509	22.8	-	-	414.7	\$16,120	\$9,113	1.8	50,000 – 100,000 hours
Laundry	21,763	5	605.2	-	129.7	\$11,000	\$2,183	5	15-20 years
Water Heater	-	-	991.7	-	90.8	\$7,000	\$902	7.8	15 years
Refrigeration Compressor	12,349	1	-	-	42.2	\$11,000	\$926	11.9	15 years
Total	179,010	28.8	1,597	-	757.3	\$46,730	\$14,878	3.1	



EXAMPLE ENERGY SAVINGS - POULTRY

Recommended Measure	Estimated Reduction in Energy Use			Estimated Costs, Savings, Payback, and Prioritization for Implementation			
	Electric Savings (kWh)	Propane Savings (gal)	Energy Savings (MMBtu)	Install Cost	Annual Cost Savings	Payback (years)	Est. Life (years)
Engine Block Heater	6,570	-	22.4	\$35	\$657	0.1	10
Insulation – seal stem wall	-	3,193	292	\$7,500	\$4,081	1.8	10
Insulation – attic	-	3,353	307	\$11,325	\$4,359	2.6	10
Compost Building/Stack house	-	1,544	141	\$20,000	\$2,007	10	20+
Tunnel Doors	-	2,116	194	\$37,500	\$2,751	13.6	15
Combined Heat Saving Measures*	-	8,317	762	\$66,325	\$10,812	6.1	
Total*	6,570	9,861	926	\$76,360	\$13,476	5.7	



EXAMPLE ENERGY SAVINGS - GRAIN

Recommended Measure	Estimated Reduction in Energy Use			Estimated Costs, Savings, Payback, and Prioritization for Implementation			
	Electric Savings (kWh)	Propane Savings (gal)	Energy Savings (MMBtu)	Install Cost	Annual Cost Savings	Payback (years)	Est. Life (years)
Lighting	3,035	-	10.4	\$972	\$273	4	10
Grain Dryer	-	13,546	1,241	\$120,900	\$16,120	7.5	20
Total	3,035	13,546	1,251	\$121,872	\$16,393	7.4	



EXAMPLE ENERGY SAVINGS - GREENHOUSE

Recommended Measure	Estimated Reduction in Energy Use			Estimated Costs, Savings, Payback, and Prioritization for Implementation			
	Electric Savings (kWh)	NG Savings (therm)	Energy Savings (MMBtu)	Install Cost	Annual Cost Savings	Payback (years)	Est. Life (years)
Lighting	5,478	-	18.7	\$624	\$252	2.5	10
Strip Curtains	945	-	3.2	\$80	\$45	1.8	10
EC Motors	615	-	2.1	\$500	\$33	15.2	15
Evaporator Fan Controls	928	-	3.2	\$350	\$46	7.5	15
Greenhouse Heating	-	9,849	984.9	\$52,000	\$7,879	6.6	15
Thermal Curtains	-	9,099	909.9	\$58,600	\$7,280	8	15
Combined natural gas measures*	-	17,187	1,718.7	\$110,600	\$13,750	8	15
Total	7,966	17,187	1,746	\$112,154	\$14,126	7.9	



QUESTIONS?

Dena Weihert, CEA
608-354-0190

Dena.Weihert@gdsassociates.com



QUESTIONS?





GDS Associates, Inc.

ENGINEERS & CONSULTANTS

