



**GREAT
RIVER
ENERGY™**

Beneficial electrification

12300 Elm Creek Boulevard • Maple Grove, Minnesota 55369-4718 • 763-445-5000 • greatriverenergy.com

Background

Mounting research suggests that electrifying certain parts of the economy – using electric technologies to replace the use of fossil fuels such as natural gas, propane, gasoline and diesel – is necessary to achieve ambitious carbon emissions reduction goals worldwide. This is possible as utilities, including Great River Energy, continue incorporating more carbon-free sources of energy into their power supply portfolios. Great River Energy recently signed agreements for another 900 megawatts of wind energy and expects to reduce its direct carbon dioxide emissions by 95% from 2005 levels by 2024. This transition is often referred to as beneficial electrification within the utility industry.

Great River Energy's position

Great River Energy and its member-owner cooperatives encourage member-consumers to pursue electric uses that meet at least one of three criteria, without adversely affecting the others: save consumers money, reduce emissions and improve overall efficiency of the electric grid. In addition, consumers may be driven to adopt electric end uses that improve their quality of life, product quality or productivity. Great River Energy also believes that significant greenhouse gas reductions can be realized by electrifying water and space heating in addition to the electrification of the transportation sector. In addition to the specific initiatives outlined below, Great River Energy and its member-owner cooperatives are working to modernize the grid to manage the integration of flexible end-use technologies and variable generation facilities in ways that lower costs for all end use members.

Beneficial electrification initiatives

'Sota Grown indoor food production

Currently, three Great River Energy member-owner cooperatives are exploring the benefits of indoor food production using large containers equipped with hydroponic growing systems. The projects will help demonstrate how indoor crop production utilizing efficient electricity, technology, plant sciences and control solutions to create microclimates can produce ideal conditions for plant growth, yield, quality and consistency.

Electric school bus pilot

As part of a pilot project that began in the fall of 2017, some Minnesota students have been transported to and from school on an all-electric school bus. This first-of-its-kind opportunity was possible through a collaboration between Schmitt & Sons, Dakota Electric Association and Great River Energy to demonstrate a battery electric school bus in a cold-weather climate as well as on longer suburban and rural routes.

Electric vehicle charging infrastructure

Great River Energy and its member cooperatives continue to help establish Minnesota's electric corridors. Charging infrastructure along I-35 and I-94 allow electric vehicle owners to reach northern Minnesota with no emissions.

Revolt electric vehicle program

Great River Energy's member cooperatives offer wind energy at no additional cost to fuel electric vehicles owned by cooperative members through Revolt program. Revolt dedicates wind energy for the life of an electric vehicle.

Demand-response programs and energy efficiency

Great River Energy promotes the efficient use of electricity through demand-response programs that shift consumption to the lowest-demand part of the day: the overnight hours. Great River Energy's member-owner cooperatives offer electric thermal storage water and space heating and other programs. They also continue to pursue opportunities for traditional energy efficiency. Improving efficiency is a key component of beneficial

electrification. Electric devices such as appliances, heat pumps and light bulbs are becoming more efficient, furthering the benefits provided by beneficial electrification initiatives.