

Our business



Energy supply

A changing landscape

For 80 years, SaskPower has provided electricity to the homes, farms and businesses of Saskatchewan – an area of vast plains, parklands, boreal forests, lakes, and rivers contained within 651,036 square kilometres. As we dedicate ourselves to providing our customers with safe and reliable power, we are also striving to strengthen the sustainability of our practices and protect the unique ecosystems within which we operate.

During 2008, SaskPower experienced another year of firsts. New marks were set that reflect the province's steady growth: record peak load, record new service applications, and record customer connects. The global economy has slowed significantly; however, the impact in Saskatchewan has not been as dramatic. In the near term, we may not see the unprecedented demand for power that has taken place over the past couple of years, but demand for power is still growing. In the next 10 years, load is expected to increase by about 40%.

Against the backdrop of continued load growth is the reality that many of our company's facilities were built in the 1950s, 60s, and 70s and are in need of upgrade or replacement. As a result, we are at the beginning of a multi-decade program of infrastructure renewal that will see the need to replace and build or acquire approximately 1,700 megawatts (MW) by 2020, with a total of 3,300 MW required by 2030.

Between 2009 and 2018, we are projecting our company will invest more than \$8 billion in the provincial electrical system, compared to \$1.6 billion in the last 5 years. With one of the most capital-intensive periods in the company's history ahead, SaskPower is committed to balancing the need to introduce cleaner sources of energy while maintaining security of supply and financial stability.

Such a comprehensive revitalization of our infrastructure represents a significant opportunity to integrate environmentally beneficial technologies while increasing the presence of renewable energy sources in our supply mix. Emissions will be a critical issue for our company as we undertake this renewal. SaskPower also recognizes the central role we must take in supporting the Government of Saskatchewan's Go Green Program, which will address the province's position as holder of the highest rate of growth in GHG emissions in Canada. Partnerships with customers, the private sector and public sector will be necessary to assist in meeting the provincial target for reducing GHG emissions levels.

Current developments

SaskPower is meeting the short-term increase in demand with low- and non-emitting sources of generation. During 2008, SaskPower and NRGreen Power completed construction of three waste heat recovery units at Alliance Pipeline's compressor stations at Loreburn, Alameda and Estlin. One unit was previously commissioned at Kerrobert. Together, the four generate 20 MW – enough power to meet the needs of about 20,000 homes – by using waste heat exhaust in a process that creates no new emissions.

Meanwhile, our company is proceeding with plans for three simple cycle gas turbine facilities. Installation is proceeding on 94 MW of generation at the Ermine Switching Station near Kerrobert and 105 MW at Queen Elizabeth Power Station. Preliminary work is underway for 141 MW at a site near North Battleford. Natural gas-fired turbines will allow SaskPower the time to further develop renewable and emissions management technologies. The units are relatively quick and easy to install, offer operational flexibility and require no long-term fuel obligation. Gas turbines produce up to 50%

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Megawatts of wind power currently in service in Saskatchewan.



less carbon dioxide (CO₂) per megawatt hour (MWh) than conventional coal-fired generation, while emissions of sulphur dioxide (SO₂), particulates and mercury are near-zero. With modern control strategies, emissions of nitrogen oxides (NO_x) will also be reduced. Installing gas turbines also lays the groundwork for SaskPower to be able to add more wind power generation in the future, as this peaking source will be in place to back up wind generation.

In 2008, our company finalized an agreement with Red Lily Wind Power Limited Partnership. SaskPower will purchase wind-generated electricity from a 25-MW facility that will be constructed northwest of Moosomin and operational in 2011. The proposal was selected initially in 2006 under a previous solicitation to partner with Independent Power Producers on projects that do not produce any new GHG emissions.

Meanwhile, a major generation-related refurbishment project was completed during the year at Poplar River Power Station. A \$125-million upgrade was concluded on Unit #1, which annually generates 10% of Saskatchewan's electricity and has been in commercial operation since 1983. The rebuild will increase the unit's output, reliability and efficiency while maintaining its viability for another 20 to 25 years.

Future additions

There are opportunities for a wide range of technologies and proponents to help secure and renew the electrical infrastructure of Saskatchewan. An evaluation of numerous options is always underway at SaskPower.

In order to optimize generation and network systems, SaskPower is developing a fully integrated supply and transmission plan. In addition to enhancing Demand Side Management (DSM) programs, future generation sources under consideration include clean coal, polygeneration, cogeneration, natural gas, imports, purchased power, nuclear, large and small hydro, and renewables such as biomass and wind.

Renewables will play an important role in SaskPower's future generation mix. Our company has approximately 172 MW of wind power currently in service. However, we are experiencing grid operating challenges due to wind's inherent variability.

In response, SaskPower has formed the Wind Power Integration and Development Unit (WPIDU) to study and assess the effect of wind power on the provincial system.

The WPIDU has invited developers with experience in wind monitoring in the province to participate in a Saskatchewan Wind Data Study, which will help determine the benefits and feasibility of building future wind facilities in geographically diverse locations. SaskPower will release a Wind Power Deployment Strategy that will address the timing, ownership and procurement process for new wind power projects in the spring/summer of 2009.

SaskPower is also working to establish a Hydroelectric Development Unit to pursue projects under a variety of construction and ownership models. At present, our company is in discussions with First Nations groups and their partners regarding potential developments on the Fond du Lac River and Saskatchewan River.

NRGREEN POWER PARTNERSHIP

Waste not, want not

More than five years ago, SaskPower issued a solicitation to partner with Independent Power Producers to build and operate small-scale generation projects that produce no new greenhouse gas emissions. Today, four NRGreen Power waste heat recovery units at Alliance Pipeline compressor stations in Saskatchewan are generating five megawatts (MW) of electricity each. Located near Kerrobert, Alameda, Loreburn and Estlin, the facilities are producing enough emissions-free power to supply the equivalent of about 20,000 homes.

“It’s just a win-win situation,” says Doug Opseth, Supervisor of Supply Development with Planning, Environment and Regulatory Affairs at SaskPower. “We get electricity with no carbon emissions and you turn a waste product into something useful.”

Using innovative technology developed and manufactured by U.S.-based energy specialist Ormat, the waste heat units recover exhaust heat from natural gas compression and convert it to electricity. The waste heat would otherwise be vented into the atmosphere.

“As the Alliance system operates over 99% of the time, this is a reliable source of energy that is being generated in an environmentally responsible manner,” says Murray Birch, President and Chief Executive Officer of NRGreen Power. “Waste heat recovery projects are one cost-effective way to address North America’s increasing energy needs, and a more efficient and effective way to operate our facilities.”

NRGreen Power and SaskPower have a 20-year power purchase agreement for the electricity generated at each of the four waste heat recovery units. According to Opseth, partnerships allow SaskPower to introduce more environmentally responsible power into Saskatchewan and help the province meet its commitment to reduce greenhouse gas emissions.

“There are a lot of companies that have an interest in participating in electrical generation in the province,” says Opseth. “In the case of NRGreen Power, the best part is that we’ve got a good relationship with a private partner to produce emissions-free electricity.”



“We get electricity with no carbon emissions and you turn a waste product into something useful.”

Doug Opseth, SaskPower

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Targeted savings in megawatts over 10 years through Demand Side Management initiatives, such as the provincial Energy Efficiency for New Homes Rebate Program.



Demand Side Management (DSM)

SaskPower Eneraction

DSM refers to initiatives undertaken with customers to reduce the demand for electricity or shift demand from peak periods to off-peak times of the day. The goal of DSM is to reduce the total demand for electricity. As a result, there is a reduction in the need for new generating stations and transmission lines. Meanwhile, shifting demand from peak periods can have a similar effect because fewer peaking sources are needed.

At our company, SaskPower Eneraction – a portfolio of energy efficiency, conservation and load management programs – is the umbrella for our DSM programming. In addition to targeting residential customers, SaskPower Eneraction is assisting commercial and industrial customers. Overall, we are targeting to deliver a total 100 MW of savings by 2017.

Energy Performance Contracting (EPC) Program

Our EPC Program is an energy management service that assists commercial and institutional customers in reducing energy-related operating costs through efficiency upgrades. New energy efficient equipment and technical conservation efforts are implemented in existing facilities. The savings from lower electricity, water and natural gas bills are used to offset the retrofit costs.

In 2008, SaskPower signed EPC contracts with Prince Albert Parkland Health Region and Sunrise Health Region. In addition, a new contract was signed with the Saskatchewan Ministry of Government Services. Overall, these new projects are expected to lead to \$6.5 million in construction and produce \$575,000 in annual energy savings. Since the inception of EPC, service has been provided to 24 projects at schools, hospitals, hotels,

office buildings and a variety of government facilities.

To date, these projects are saving 25 million kilowatt hours (kWh) per year.

SaskPower and SaskEnergy are key sponsors of the Destination Conservation Saskatchewan (DCS) program. Delivered in schools across the province by the Saskatchewan Environmental Society, DCS is student-driven and activity-based, with an emphasis on environmental awareness and energy conservation. It promotes sustainability by helping schools conserve resources and protect the environment, and is an integral part of SaskPower's EPC Program for Saskatchewan school divisions.

Energy efficiency and geothermal initiatives

In 2008, SaskPower introduced the Residential Geothermal and Renewable Program. It encourages smaller-scale, environmentally responsible generation. Eligible homeowners and farm customers can receive a loan for up to \$25,000 for installing a geothermal system, as well as a loan of up to \$25,000 for installing a renewable system. Geothermal systems take advantage of the ground's heating and cooling properties to heat or cool entire buildings.

SaskPower has also enhanced funding of the existing provincial Energy Efficiency for New Homes Rebate Program, which provides incentives to Saskatchewan residents who purchase or build a newly constructed energy efficient home that is either ENERGY STAR®-qualified, R-2000-certified or has an EnerGuide for New Homes rating of 80 or above. SaskPower's contribution supports \$3,500 for the installation of a CAN/CSA-C448 compliant geothermal system.



SaskPower's Alternative Farm Energy Solar- or Wind-Powered Livestock Water Pumping Program assists producers with the cost of installing renewable energy sources.

Residential Furnace Program

The Residential Furnace Program's goal is to assist SaskPower customers with the installation of a high efficiency furnace/boiler and high efficiency direct current motor to reduce utility costs and use less energy for heating. The program is operated in partnership with SaskEnergy and the SaskEnergy Network Members of heating ventilating and air conditioning (HVAC) contractors, using a prime rate loan program.

Residential lighting

When it comes to applying hands-on solutions to reducing energy use, SaskPower's residential customers are responding well. During the year, our company teamed with 1,100 local volunteers to deliver over 200,000 compact fluorescent light (CFL) bulbs in 110 communities throughout Saskatchewan. The estimated annual effect is: 12,000,000 kWh of energy savings; 9,000 tonnes of greenhouse gas (GHG) reductions; and a 6-MW decrease in demand.

In 2008, SaskPower also operated a Seasonal LED Exchange Program at 33 retail stores, with residents encouraged to bring in old incandescent strings in exchange for a \$3 coupon to be used toward energy efficient LED replacements. Over 24,000 old inefficient light strings were collected and 12,000 LED light string coupons distributed. SaskPower Eneraction event staff, along with the retailers, recycled the old light strings. December and January are typically the peak months for power use in Saskatchewan.

Public awareness

Our Power Savings advertising campaigns educate customers about not only residential lighting, but also other ways to save power, manage costs, and help the environment. In March, SaskPower introduced a multimedia advertising campaign to promote the energy savings and environmental benefits of upgrading to ENERGY STAR®-qualified appliances. SaskPower worked with provincial appliance retailers to provide in-store information to help customers learn more about the province's PST rebate and make informed choices when purchasing energy efficient appliances.

On the web, a cost calculator is available at saskpower.com as part of SaskPower's Power Saving Tips and Tools. This service allows customers to understand where their energy dollars are going and to receive information on how to conserve energy, reduce GHG emissions and save money on energy bills. In 2008, SaskPower held two contests to encourage customers to choose paperless billing through the online service MyPower Account. Since launching MyPower Account in 2007, SaskPower has signed up over 24,000 customers and nearly 19,000 have chosen paperless billing.

Customer-based generation

Net Metering Program

In 2008, SaskPower enhanced funding of the province's Net Metering Program. The initiative now offers a maximum \$35,000 incentive for residents who wish to participate, with a maximum of \$10,000 of the total coming from SaskPower. Net metering allows customers who generate their own electricity to feed excess power back to SaskPower's system and bank credits for up to one year to offset future electricity use. Only environmentally friendly technologies are eligible, and include wind, solar, low-impact hydroelectric, biomass, flare gas and heat recovery.

The program encourages customers to generate up to 100 kilowatts (kW) of their own electricity for the purpose of offsetting power that would otherwise be purchased from our company. In order to accommodate net metering, a bi-directional or net meter is installed by SaskPower. To date, there are 44 net metering participants.

Small Power Producers Policy

SaskPower continues to offer the Small Power Producers Policy. This initiative applies to wind- and solar-powered facilities, as well as other viable generating sources that are a maximum of 100 kW in size. Under the Small Power Producers Policy, SaskPower will purchase excess energy at the marginal price for that electricity.

Water Pumping Incentive Program

The Alternative Farm Energy Solar- or Wind-Powered Livestock Water Pumping Incentive Program offers

a grant equal to 50% of the cost above \$500, to a maximum of \$500, toward the purchase and installation of a solar- or wind-powered water pumping system for farm livestock. This program assists producers who would otherwise have to run power lines to remote wells, dug-outs or streams. In 2008, 222 solar projects were approved with grants totalling \$110,216; nine wind projects were approved with grants totalling \$4,145.

GreenPower

Purchasing wind-generated electricity

Introduced in 2002, SaskPower GreenPower is an optional electricity product providing customers with the opportunity to support the development of EcoLogo-certified renewable energy in Saskatchewan. GreenPower is supported by individuals, small businesses and large businesses from all parts of the province. The 11-MW SunBridge Wind Power Project and 11-MW Cypress Wind Power Facility supply GreenPower.

With over 1,200 subscribers, customers have now exhausted our GreenPower supply. We have temporarily stopped taking new applications for the program while it is being assessed. We are reviewing a number of renewable supply options to ensure we are able to continue to meet the growing demand for GreenPower.