



# HOW OUR POWER

## FLOWS

Q&A DOCUMENT

The following is a complete list of questions and answers from a SaskPower online learning event, How Our Power Flows, hosted on October 5<sup>th</sup>, 2022. Questions were submitted by participants during the session.

**1. I always hear SaskPower talking about building power generation near urban centers or where our population is higher - not up North, for example. Why is that?**

Essentially, it's a balance between where the generation is sited and where the generation has to go. Locating power generation closer to where it is needed (load centers) is more efficient. It reduces transmission losses because we only need to move that power over shorter distances, and then distribute it.

There are a lot of considerations and it is about putting generation where it makes the most sense. Siting generation also requires other resources, like availability of water or the fuel needed to generate the power, availability of other construction materials and workforce. For example, there are pipelines that run diagonally starting near Lloydminster across the province. It makes sense to build natural gas generation near those pipelines.

**2. For tie-lines across borders, who is responsible for building them and maintaining them?**

We have joint operating agreements or interconnection agreements with our neighboring jurisdictions: Manitoba Hydro; the Southwest Power Pool to the South in the United States; and to Alberta with the Alberta Electric System Operator (AESO). Our agreements with those counterparties help coordinate our planning and facility operations. SaskPower is responsible for the transmission lines within our provincial boundaries.

**3. I know there's talk about a lithium battery storage, but any plans about flow battery storage?**

SaskPower is actively engaged in and looking at all battery technologies including lithium-ion technology. Our first utility scale battery at the Fleet Street switching station in Regina is lithium ion.

We are always assessing options based on the best value and reliability for our customers. We first determine the parameters and specs to meet our needs and then look to the market for the best technology and solution that can meet those needs.

As we explore all options, we are also following along as technologies evolve and market changes dictate what technology gets incorporated as battery projects are being evaluated not just by us, but by other utilities as well.

#### **4. What part will customers or others play in providing generation in the future?**

Customer solar generation is a good example of on-site power produced by customers and provided to SaskPower. The key to any customer providing generation now or in the future is having two-way power flow or two-way communication so we can understand what is being connected to our system at a distribution level.

For example, when a crew is working on a distribution line, we isolate the SaskPower source before the crew would start working on the line. With more potential for new sources of generation from customers on the other side of the line, more distribution planning is required that includes safeguards to make sure our crews are safe when they're working on our distribution lines.

Smart meter technology and smart grids will also help make sure that we're continuing to operate and maintain our lines in the safe manner.

#### **5. CCUS seems to be the only technology that lowers emissions, why not more of it?**

The CCS project at Boundary Dam Unit 3 (BD3) continues to be an important part of SaskPower's efforts to provide reliable, sustainable power for Saskatchewan. Since the facility was commissioned, CCS has captured 4,752,988 tonnes of CO<sub>2</sub> that would have otherwise entered the atmosphere.

When we built this facility, a lot of our power supply came from conventional coal. As one of the first to build this specific technology, we worked through a number of challenges and there are still challenges with CCS, like cost and reliability. We were hoping others would adopt CCS on coal, improving on our project design to make it more reliable and cheaper over time. Since we developed CCS, we have not seen much uptake elsewhere for carbon capture on coal.

Looking to the future, SaskPower is evaluating a diverse portfolio of options to reduce emissions while ensuring stable, reliable power for our customers, including significantly increased wind and solar, utility-scale energy storage, CCS on natural gas, hydrogen, and nuclear power from small modular reactors (SMRs).

#### **6. Can you explain the function of a substation?**

Substations or switching stations are where voltage conversion occurs. Substations are typically used for distribution of energy, and these are used to step the voltage down to serve load. They take high voltage electricity and reduce it down so you can use it in your house. Switching stations, which are transmission stations, is where we step the voltage up so it can be more easily moved over longer distances.

**7. What is the contingency plan for power distribution in case major disasters occur like down east recently?**

We have a spare equipment strategy for transmission structures where we have on hand an inventory of available infrastructure that includes at least 10 kilometers of wood replacement poles. If we have a storm or tornado move through an area, we can build a bypass without having to wait for material.

SaskPower is not perfect, but when there is a crisis like major storms or weather events, SaskPower is excellent at responding to outages. We have procedures in place at our instant response center to get electricity back on as soon as possible. For some areas in our province, however, there is only one line providing power. If the only road to a town or city gets washed out and that line gets blown down, it takes a little bit more time to get the power back on.

There's also a good partnership in the utility industry to help when major catastrophes happen. Neighbouring utilities help each other through emergency transfers of power (sending extra electricity). We've also sent crews to other jurisdictions to help build new transmission lines or provide repair services.

**8. Where does excess generation go or is it controlled by on/off generation. Some goes out of province, but only if needed.**

We have a team of highly trained system operators whose job it is to manage the power. When we have more power than we have load or when we have less power and more load, we use our interties with other jurisdictions to push and pull power from our neighbors.

We also have an energy marketing arm called North Point Energy Solutions here at SaskPower. They buy and sell electricity for SaskPower to Alberta or to North Dakota.

**9. Would distributed/private generation erode grid reliability over time? If large industrial customers and residential users provide their own power, does that take revenue away from SaskPower for critical maintenance and upgrades?**

SaskPower has processes in place to ensure we can provide reliable power to our customers when they need it. We also regularly update those processes, which take into consideration new and evolving technologies. We're also looking at our pricing and rate structure to ensure we can provide reliable, affordable, and sustainable power to all customers now and in the future.